4.0 ENVIRONMENTAL ANALYSIS

4.0 OVERVIEW OF EIR METHODOLOGY AND SIGNIFICANCE DETERMINATION

The EIR includes as much detail as possible to maximize information available for public review and thus avoid and/or minimize the need for future environmental documentation (see Section 2.0 of this EIR for further explanation of the EIR process). The EIR includes information gathered from the Initial Study/Notice of Preparation (Appendix A), correspondence from utility/service providers (Appendix J), available literature/reference documents, and consultation with potentially affected agencies (see Section 2.7, *INCORPORATION BY REFERENCE*). In addition, several technical studies were prepared for review and incorporation into this EIR. Technical studies completed for the proposed Poseidon desalination project include:

- Air Quality Data
- Noise Data
- Source Water Analysis
- Receiving Water Analysis
- Watershed Sanitary Survey
- Marine Biological Analysis
- Preliminary Pipeline Assessment
- Geological Report
- Hydrology Report
- RO Membrane Cleaning Solution Discharge Test Stream Data
- Booster Pump Station Biological Constraints Survey
- Cultural Resources Assessment Reports

The analysis of the project's impacts, as contained in this EIR, is presented to clearly indicate the significance determination for each of the impacts by numbering each impact, with a correspondingly numbered impact discussion, and, if necessary, mitigation measure(s). The significance determinations are based on a number of factors as explained in each impact section. These primarily include Appendix G of the CEQA Guidelines, General Plan policies, ordinances, generally accepted professional standards, and established quantified thresholds by the City of Huntington Beach or other agencies.

The following is an explanation of the different significance determinations made in this EIR:

A. Not Significant

This determination is made when any of the three following cases apply:

1) *No Impact:* Due to the nature or location of the project, this impact will not occur. For example, underground facilities do not have the potential for long-term visual impacts

2) *Less Than Significant:* Although an impact may occur, it will not be at a significant level based on the above described standards. For example, construction-related air emissions that fall below the adopted air quality standards are less than significant.

3) *Potentially Significant Impact "Mitigated" Through Existing Requirements (No EIR mitigation required):* In this case, there is an impact which, although it is potentially significant, will be reduced to less than significant levels through adherence to and/or implementation of various existing requirements. These existing requirements include the City of Huntington Beach Ordinances, engineering and design requirements (through the Uniform Building Code and other regulations), and from other regional, state, and federal agencies.

B. Less Than Significant With Mitigation

This determination is made when a potentially significant impact can be reduced, avoided or offset to less than significant levels by incorporating EIR mitigation measures.

C. Significant With Mitigation

This determination is made for a potentially significant impact where there is either no mitigation available, or the recommended mitigation measures are not sufficient to reduce the impact to less than significant levels. This determination requires a Statement of Overriding Considerations, pursuant to CEQA Guidelines Section 15093 (this would be adopted by the City of Huntington Beach prior to approving the project).

4.1 LAND USE / RELEVANT PLANNING

The purpose of this section is to discuss the impacts of project implementation upon land uses on the project site and adjacent areas. This section includes a discussion of existing conditions including on-site and off-site land uses. Potential impacts of the proposed project are examined including compatibility with surrounding land uses, the City of Huntington Beach General Plan, the City of Huntington Beach Local Coastal Program, and the City of Huntington Beach Zoning and Subdivision Ordinance.

EXISTING CONDITIONS

ON-SITE LAND USES

The approximately seven-acre desalination facility site is located within the City of Huntington Beach, south of Hamilton Avenue, north of Pacific Coast Highway, east of Newland Street, and west of Magnolia Street. The proposed project site consists of three fuel storage tanks formerly used in conjunction with the Huntington Beach Generating Station. The "west" and "north" tank sites (possible locations for the optional aboveground product water storage tank) are also developed with fuel storage tanks. For additional information regarding existing conditions, refer to Section 3.0, *PROJECT DESCRIPTION*, Exhibit 2, *SITE VICINITY MAP*, Exhibit 4, *CONCEPTUAL PIPELINE ALIGNMENTS*, Exhibit 5, *BOOSTER PUMP STATION LOCATION MAP*, and Exhibit 12, *SITE PHOTOGRAPHS*.

ADJACENT LAND USES

Surrounding adjacent land uses to the desalination site include the AES Huntington Beach Generating Station to the southwest, a wetland area to the southeast, the Orange County Flood Control District (OCFCD) flood channel to the east, a fuel oil storage tank to the north, and an electrical switchyard to the west. Additional surrounding land uses include Pacific Coast Highway to the south; the Edison Pipeline and Terminal Company (EPTC) storage tank facility to the east; Ascon/Nesi Landfill to the northeast; commercial, industrial, recreational, and residential uses to the north; and Newland Street, Huntington-By-The-Sea Mobile Home Park, and Cabrillo Mobile Home Park to the west.

OFF-SITE PIPELINE ALIGNMENT AND UNDERGROUND PUMP STATION

The proposed pipeline alternatives are adjacent to a variety of land uses, including residential, commercial, educational, medical, and recreational. The proposed 42- to 48-inch diameter pipeline alignments will occur within existing street right-of-way (ROW) or easements. However, portions of the pipeline alignments are proposed to be installed within areas of Edison Community Center (Huntington Beach), Costa Mesa Country Club (Costa Mesa), and Fairview State Hospital (Costa Mesa). The proposed underground pump station is located within an Orange County Resource Preservation Easement surrounded by residential and open space uses. Although the Resource Preservation Easement is subject to various development restrictions, the pump station would be situated in an area of the Easement where limited development is allowed and two underground pump stations already exist.

RELEVANT PLANNING

Zoning and Subdivision Ordinance

The purpose of the City's Zoning and Subdivision Ordinance is to implement the policies of the City of Huntington Beach General Plan. The goal of this document is to promote and protect the public health, safety, and general welfare of Huntington Beach residents and provide the physical, economic, and social advantages which result from a comprehensive and orderly planned use of land resources. The desalination plant site's zoning designation is "General Industrial with Oil, Coastal Zone, and Flood Plain Overlays (IG-O-CZ-FP2)" (refer to Exhibit 9, *ZONING*). The proposed desalination plant does not propose to change any existing zoning designations. As the subject site is located within the coastal zone, the City's Local Coastal Program is inclusive of the Zoning and Subdivision Ordinance and its policies.

However, in a separate action, the City of Huntington Beach is processing a zoning map amendment to change the zoning on the property from "General Industrial" to "Public". This amendment is one of a series in which the City is correcting the zoning of various properties to make it consistent with the General Plan designations that were changed with the General Plan update in 1996. The desalination plant is consistent with the proposed "Public" zoning designation.

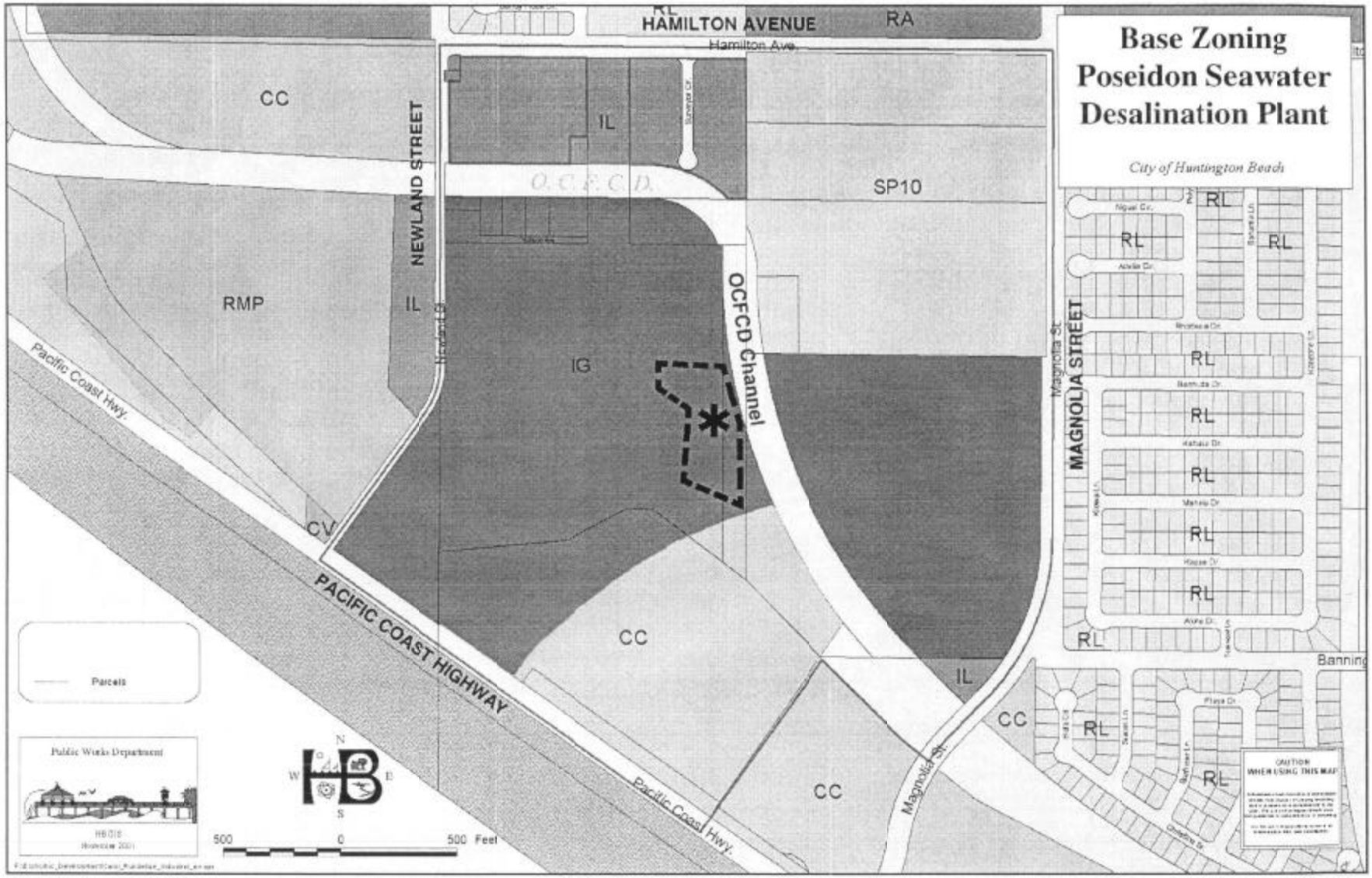
City of Huntington Beach General Plan

The City of Huntington Beach General Plan is used by the City of Huntington Beach as the document to set baseline land use criteria within the City (refer to Exhibit 10, *LAND USE DESIGNATIONS*). The project site is designated as "Public (P)" by the City's General Plan. Typical permitted uses within areas of this designation include governmental administrative and related facilities, such as utilities, schools, public parking lots, infrastructure, religious, and similar uses. The policies and portions of the following General Plan Elements are relevant to the proposed project:

Local Coastal Program (Coastal Element)

The California Coastal Act of 1976 requires that local governments lying whole or in part within the coastal zone prepare a Local Coastal Program for its portion of the coastal zone. The Coastal Zone within the City of Huntington Beach runs from the northern City limit at Seal Beach, south nine miles to the Santa Ana River at the Huntington Beach/Newport Beach boundary, totaling approximately five square miles. The following policies of the Local Coastal Program are relevant to the proposed desalination plant, as it lies within the Coastal Zone:

- Policy 1.1.1 (page Coastal Element IV-C-100): "With the exception of hazardous industrial development, new development shall be encouraged to be located within, contiguous or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services, and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources."



IL = Limited Industrial
IG = General Industrial
CC = Coastal Conservation
SP10 = Specific Plan 10

RL = Low Density Residential
RA = Residential Agriculture
RMP = Manufactured Home Park
CV = Visitor Commercial

* - Project Site

POSEIDON SEAWATER DESALINATION PROJECT

Zoning

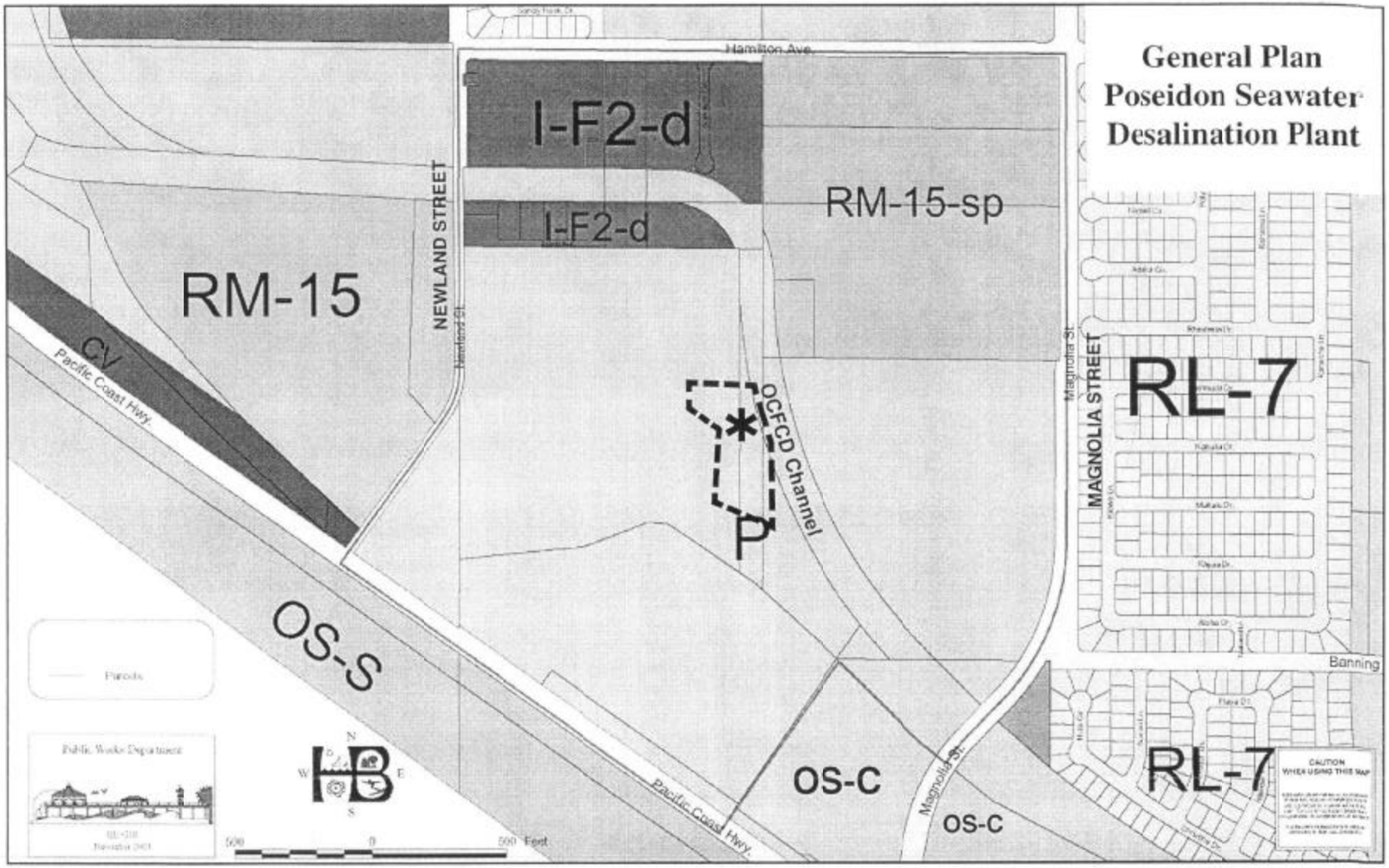
Exhibit 9

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

06/02

JN 10-101409



RL-7 = Residential Low Density (maximum of 7.0 dwelling units per net acre)
RM-15 = Residential Medium Density (maximum of 15 dwelling units per acre)
RM-15-sp = Residential Medium Density (maximum of 15 dwelling units per acre, specific plan overlay)
P = Public

I-F2-d = Industrial (maximum floor area ratio of 0.5, design overlay)
CV = Commercial Visitor
OS-S = Open Space - Shore
OS-C = Open Space - Conservation

* - Project Site

POSEIDON SEAWATER DESALINATION PROJECT

Land Use Designations

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

08/02 JN 10-101409

Exhibit 10

- Policy 4.2.1 (page Coastal Element IV-C-111): "Ensure that the following minimum standards are met by new development in the Coastal Zone as feasible and appropriate:

  A. Preservation of public views to and from the bluffs, to the shoreline and ocean and to the wetlands.
  B. Adequate landscaping and vegetation.
  C. Evaluation of project design regarding visual impact and compatibility.
  D. Incorporate landscaping to mask oil operations and major utilities, such as the electrical power plant on Pacific Coast Highway.

- Policy 4.2.3 (page Coastal Element IV-C-111): "Promote the preservation of significant public view corridors to the coastal corridor, including views of the sea and the wetlands through strict application of local ordinances, design guidelines, and related planning efforts, including defined view corridors."

- Policy 4.7.1 (page Coastal Element IV-C-114): "Promote the use of landscaping material to screen uses that detract from the scenic quality of the coast along public right-of-way and within public view."

- Policy 4.7.5 (page Coastal Element IV-C-114): "Require the review of new and/or expansions of existing industrial and utility facilities to ensure that such facilities will not visually impair the City's coastal corridors and entry nodes."

- Policy 4.7.8 (page Coastal Element IV-C-114): "Require landscape and architectural buffers and screens around oil production facilities and other utilities visible from public rights-of-way."

- Policy 4.7.9 (page Coastal Element IV-C-114): "Require the removal of non-productive oil production facilities and the restoration of the vacated site."

- Policy 6.1.1 (page Coastal Element IV-C-116): "Require that new development include mitigation measures to prevent the degradation of water quality of groundwater basins, wetlands, and surface water."

- Policy 6.1.13 (page Coastal Element IV-C-119): "Encourage research and feasibility studies regarding ocean water desalinization as an alternative source of potable water. Participate in regional studies and efforts where appropriate."

- Policy 6.1.19 (page Coastal Element IV-C-119): "Prior to approval of any new or expanded seawater pumping facilities, require the provision of maximum feasible mitigation measures to minimize damage to marine organisms due to entrainment in accordance with State and Federal law."

- Policy 7.1.3 (page Coastal Element IV-C-121): "Development" in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas."

- Policy 7.1.4 (page Coastal Element IV-C-121): Require that new development contiguous to wetlands or environmentally sensitive habitat areas include buffer zones. Buffer zones shall be a minimum of one hundred feet setback from the landward edge of the wetland, with the exception of the following:

  A lesser buffer may be permitted if existing development or site configuration precludes a 100-foot buffer, or conversely, a greater buffer zone may be required if substantial development or significantly increased human impacts are anticipated. In either case, the following factors shall be considered when determining whether a lesser or wider buffer zone is warranted. Reduced buffer zone areas shall be reviewed by the Department of Fish and Game prior to implementation.

  A. Biological significance of adjacent lands: The buffer should be sufficiently wide to protect the functional relationship between wetland and adjacent upland.
  B. Sensitivity of species to disturbance: The buffer should be sufficiently wide to ensure that the most sensitive species will not be disturbed significantly by permitted development, based on habitat requirements of both resident and migratory species and the short and long term adaptability of various species to human disturbance.
  C. Susceptibility of parcel to erosion: The buffer should be sufficiently wide to allow for interception of any additional material eroded as a result of the proposed development based on soil and vegetative characteristics, slope and runoff characteristics, and impervious surface coverage.
  D. use of existing cultural features to located buffer zones: Where feasible, development and buffer zones should be located on the sides of roads, dikes, irrigation canals, flood control channels, etc., away from the environmentally sensitive habitat area."

- Policy 7.1.5 (page Coastal Element IV-C-122): "Notify State and Federal agencies having regulatory authority in wetlands and other environmentally sensitive habitats when development projects in and adjacent to such areas are submitted to the City. The implementation of any Habitat Conservation Plan shall require an amendment to the Local Coastal Program. Incidental take of sensitive habitat and/or species that occurs in the context of development must be consistent with this LCP."

- Policy 10.1.4 (page Coastal Element IV-C-128): "Require appropriate engineering and building practices for all new structures to withstand ground shaking and liquefaction such as those stated in the Uniform Building Code."

Land Use Element

- Policy LU 4.1.1 (page II-LU-20): "Require adherence to or consideration of the policies prescribed for *Design and Development* in this Plan, as appropriate."

- Policy LU 4.1.2 (page II-LU-20): "Require that an appropriate landscape plan be submitted and implemented for development projects subject to discretionary review."

- Policy LU 4.1.6 (page II-LU-20): "Require that commercial and industrial development incorporate adequate drought-conscious irrigation systems and maintain the health of the landscape."

- Policy LU 4.2.1 (page II-LU-20): "Require that all structures be constructed in accordance with the requirements of the City's building and other pertinent codes and regulations; including new, adaptively re-used, and renovated buildings."

- Policy LU 4.2.4 (page II-LU-20): "Require that all development be designed to provide adequate space for access, parking, supporting functions, open space, and other pertinent elements."

- Policy LU 4.2.5 (page II-LU-20): "Require that all commercial, industrial, and public development incorporate appropriate design elements to facilitate access and use as required by State and Federal laws such as the American's with Disabilities Act."

- Policy LU 5.1.1 (page II-LU-21): "Require that development protect environmental resources by consideration of the policies and standards contained in the Environmental Resources/Conservation Element of the General Plan and Federal (NEPA) and State (CEQA) regulations."

  During the development review process:

  A. Review any development proposal for the Bolsa Chica area to ensure that no development is permitted in Federally delineated wetlands; and
  B. Review any development proposed for non-wetland areas to ensure that appropriate setbacks and buffers are maintained between development and environmentally sensitive areas to protect habitat quality.

- Policy LU 7.1.2 (page II-LU-22): "Require that development be designed to account for the unique characteristics of project sites and objectives for community character and in accordance with the Development "Overlay" Schedule as appropriate."

- Policy LU 7.1.5 (page II-LU-22): "Accommodate the development of a balance of land uses that maintain the City's fiscal viability and integrity of environmental resources."

- Policy LU 12.1.4 (page II-LU-41): "Require that new and recycled industrial projects be designed and developed to achieve a high level of quality, distinctive character, and compatible with existing uses."

- Policy LU 12.1.5 (page II-LU-41): "Require that new and recycled industrial structures and sites be designed to convey visual interest and character and to be compatible with adjacent uses, considering the:

  A. Use of multiple building masses and volumes to provide visual interest and minimize the visual sense of bulk and mass;
  B. Architectural design treatment of all building elevations;
  C. Use of landscaping in open spaces and parking lots, including broad landscaped setbacks from principal peripheral streets;
  D. Enclosure of storage areas with decorative screening or walls;
  E. Location of site entries to minimize conflicts with adjacent residential neighborhoods; and
  F. Mitigation of noise, odor, lighting, and other impacts.

- Policy LU 12.1.7 (page II-LU-42): "Control the development of industrial uses that use, store, produce, or transport toxins, generate unacceptable levels of noise or air pollution, or result in other impacts that may adversely impact Huntington Beach."

Urban Design Element

- Policy UD 2.1.1 (Page II-UD-27): Require that new development be designed to consider coastal views in its massing, height, and site orientation."

Economic Development Element

- Policy ED 2.5.2 (Page II-ED-24): "Seek to capture "new growth" industries such as, but not limited to:

  A. "Knowledge" based industries, such as research and development firms (higher technology communications and information industries);
  B. Communication industry service providers and equipment manufacturers which are creating the next series of consumer and utility company equipment and services;
  C. Biotechnical industries;
  D. Environmental technology; and
  E. Point of sale industries.

Environmental Resources/Conservation Element

- Policy ERC 4.1.5 (Page IV-ERC-25): "Promote the preservation of public view corridors to the ocean and the waterfront through strict application of local ordinances, design guidelines and related planning efforts, including defined view corridors."

Air Quality Element

- Policy AQ 1.8.2 (Page IV-AQ-15): "Require installation of temporary construction facilities (such as wheel washers) and implementation of construction practices that minimize dirt and soil transfer onto public roadways."

Environmental Hazards Element

- Policy EH 1.2.1 (Page V-EH-24): "Require appropriate engineering and building practices for all new structures to withstand groundshaking and liquefaction such as stated in the Uniform Building Code (UBC)."

Noise Element

- Policy N 1.2.2 (Page V-N-6): "Require new industrial and new commercial land uses or the major expansion of existing land uses to demonstrate that the new or expanded use would not be directly responsible for causing ambient noise levels to exceed an exterior Ldn of 65 dB(A) on areas containing "noise sensitive" land uses."

Hazardous Materials Element

- Policy HM 1.1.4 (Page V-HM-7): "Implement federal, state, and local regulations for the handling, storage, and disposal of hazardous materials."

- Policy HM 1.2.2 (Page V-HM-7): "Ensure that hazardous waste transportation activities are conducted in a manner that will minimize risks to sensitive uses."

- Policy HM 1.4.4 (Page V-HM-8): "Require that owners of contaminated sites develop a remediation plan with the assistance of the Orange County Environmental Management Agency (EMA)."

California Coastal Act

As the proposed project is situated within the Coastal Zone in the City of Huntington Beach, and the City has an approved Local Coastal Plan, the desalination plant will require a Coastal Development Permit from the City. However, various types of development within the Coastal Zone are also required to obtain a Coastal Development Permit from the California Coastal Commission. These developments are defined in the California Coastal Act (January 2002), Section 30106 as,

"on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste...or construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility..." As such, the proposed desalination facility's ocean discharge will require separate review and approval by the California Coastal Commission of a Coastal Development Permit.

IMPACTS

Significance Criteria

A project will normally have a significant adverse environmental impact on land use if it results in any of the following:

- a conflict with adopted environmental plans and goals of the community in which it is located;
- a disruption or division of the physical arrangement of an established community;
- a conflict with established recreational, educational, religious, or scientific uses of the area;
- induce substantial growth of concentration of people; or
- displace a large number of people.

Potential impacts related to land use and relevant planning growth have been identified and are categorized below according to topic.

LAND USE

The project proposes to implement a seawater desalination plant on a site surrounded by industrial uses. Residential uses are situated in the site vicinity, the nearest of which is located approximately 1,000 feet west of the subject site. The project has the potential to create impacts with regards to air quality, noise, aesthetics, hazards and hazardous materials, and short-term construction impacts (addressed in the corresponding EIR section). However, the proposed desalination plant will be consistent with the City of Huntington Beach General Plan, Local Coastal Program, and Zoning and Subdivision Ordinance, and will be subject to discretionary review and conditions of approval as part of the City's Conditional Use Permit and Coastal Development Permit process. With implementation of standard construction measures and recommended mitigation measures throughout the EIR, there are no anticipated significant land use impacts associated with short-term construction/remediation activities or long-term plant operation. The proposed pipeline alternatives and underground pump station are adjacent to a variety of land uses, including residential, open space, commercial, educational, medical and recreational. However, the pipelines and underground pump station will be subsurface and are not anticipated to result in any long-term land use impacts. These issues are discussed within other EIR sections, including 4.4 (Air Quality), 4.5 (Noise), 4.7 (Aesthetics/Light & Glare), 4.8 (Hazards and Hazardous Materials), and 4.9 (Construction Related Impacts).

RELEVANT PLANNING

The project evaluated within this EIR proposes to implement a 50 mgd desalination plant within an industrial area. Project implementation would be consistent with the City of Huntington Beach General Plan, Local Coastal Program, and Zoning and Subdivision Ordinance. During the "design development" stage, the Applicant will be submitting more detailed plans reflecting code and policy compliance with specific issues. No significant relevant planning issues have been identified.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

As the City of Huntington Beach General Plan and Zoning designations for the optional tank sites are the same as those for the proposed desalination facility site and implementation of an optional aboveground tank would comply with such designations, impacts are generally anticipated to be similar in nature to the proposed project. Utilization of the "West" tank site for the product water tank operation would place this structure closer to residential uses to the west, along the western side of Newland Street. However, a fuel oil storage tank currently exists on-site, and would be replaced by a new product water tank with an improved aesthetic character. With implementation of standard construction measures and recommended mitigation measures throughout the EIR, there are no anticipated significant land use impacts associated with short-term demolition, construction, and remediation activities or long-term operation of the optional aboveground storage tank. Land use issues for this tank option are further discussed in Section 4.4, *AIR QUALITY*, Section 4.5, *NOISE*, Section 4.7, *AESTHETICS/LIGHT & GLARE*, Section 4.8, *HAZARDS AND HAZARDOUS MATERIALS*, and Section 4.9, *CONSTRUCTION-RELATED IMPACTS*.

MITIGATION MEASURES

LAND USE

None required.

RELEVANT PLANNING

None required.

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.2 GEOLOGY, SOILS, & SEISMICITY

The following section is based on information supplied by the City of Huntington Beach General Plan (May 1996), United States Department of Agriculture Soil Conservation Service and Forest Service Soil Survey (September 1978), the United States Geologic Survey Newport Beach Quadrangle (1981), the Alquist-Priolo Earthquake Fault Zoning Act (July 1995), the Geologic Map of Orange County California , Showing Mines and Mineral Deposits, California Division of Mines and Geology (1981), the Preliminary Review of Geotechnical Constraints and Geologic Hazards, Poseidon Resources Orange County Desalination Project, Huntington Beach, California (July 11, 2002), the Preliminary Review of Geotechnical Constraints and Geologic Hazards, Poseidon Resources Orange County Desalination Project, Huntington Beach, California, North and West Tank Options (July 12, 2002), and the Federal Emergency Management Agency Flood Insurance Rate Map (revised February 13, 2002). In addition, Robert H. Sydnor of the California Division of Mines and Geology (CDMG) provided a comprehensive bibliography and several relevant maps that have been reviewed and incorporated into this section (see Section 9, BIBLIOGRAPHY).

It should be noted that no site-specific geotechnical investigation has been performed for the proposed project. However, there have been several subsurface geotechnical/environmental studies performed in the site vicinity to provide a basis for the Geotechical Reports prepared for this EIR (refer to Appendix H, GEOLOGICAL REPORT - DESALINATION SITE, and Appendix I, GEOLOGICAL REPORT - OPTIONAL ABOVEGROUND PRODUCT WATER STORAGE TANK SITES). These studies include:

- *Geotechnical Investigation for Future Huntington Beach Maintenance Facility, East End of Edison Road, East of Newland Street, Huntington Beach, California. Prepared by G.A. Nicoll, Inc., 2000.*
- *Geotechnical Investigation, Huntington Beach Channel (Flood Control Facility No. D01, City of Huntington Beach, County of Orange, California. Prepared for the Orange County Environmental Management Agency, February 21, 1991.*
- *Huntington Beach Generating Station Phase II Environmental Site Assessment. Prepared by CH2M Hill, November 27, 1996.*
- *Preliminary Geotechnical Assessment, Southeast Reservoir Site Acquisition, Huntington Beach, California. Prepared by GeoLogic Associates, May 24, 2002.*

EXISTING CONDITIONS

SITE TOPOGRAPHY

The proposed project site is unpaved and is currently developed with two large fuel oil storage tanks ("South" and "East" tanks), one smaller distillate fuel tank, containment berms, pipelines, pumps, and associated structures. The subject site lies at an elevation of approximately five feet above mean sea level. The three storage tanks on-site are surrounded on all sides by a 10-to 15-foot high soil containment berm (the berm to the north of the "South" fuel oil tank is situated outside of the project site boundaries, however). Each tank is elevated by approximately two to three feet above the floor of the site, which slopes gently to the southeast.

SURROUNDING TOPOGRAPHY

Areas within the project vicinity are similar in topography to the subject site. Surrounding areas to the west, north, and east are generally flat and have an approximate elevation of five feet above mean sea level. Elevations to the south gradually slope in a southwest orientation along Huntington State Beach and Huntington City Beach towards the Pacific Ocean. The Santa Ana River, located to the east of the project vicinity, lies in a depression with an approximate elevation of sea level at the mouth to six inches above mean sea level a quarter mile upstream. In addition, the Ascon/Nesi Landfill (located approximately 300 feet northeast of the project site) is elevated several feet above grade as a result of the accumulation of oil drilling byproducts and solid waste during its operation from approximately 1938 to 1984.

The most noticeable topographic feature in the area is the Huntington Beach Channel, which is operated and maintained by the Orange County Flood Control District (OCFCD). This channel borders the eastern margin of the project site. This 60-foot wide channel is bounded on each side by a five- to seven- foot high levee, while the bottom of the channel lies at one foot below mean sea level. The interior sides of the portion of the levee nearby the subject site are to be improved with driven sheet-piles in order to increase the capacity of the channel in mid 2002. Each of the 33-to 36-foot long interconnecting sheet-piles will be driven to the point where only 10 to 12 feet of each pile will be exposed above the bottom of the channel. The southern limit of the new sheet-pile wall is planned to terminate near the southeast corner of the project site.[1, 2]

SITE GEOLOGY

Surficial Geology

The native soils beneath the project site consist of an upper 60-foot thick layer of interbedded coastal estuarine/littoral sediments consisting of fine sand, silt, clay, and mixtures thereof. According to GeoLogic Associates (2002), these sediments range in age from approximately 8,600 years old to the present. Between a depth of about 60 to 90 feet, the native sediments are represented by middle to late Holocene (8,600 to 11,000 years old) fluvial deposits. These sediments are composed largely of sand and clayey sand with layers and lenses of silt and highly plastic clay that contains varying amounts of organic detritus. Below a depth of 90 feet below ground surface are Pleistocene (11,000 to 1.8 million years old) marine and non-marine strata. These native soils are overlain by varying thicknesses of artificial fill soil that was placed during construction of the Huntington Beach Generating Station and associated fuel storage tanks. According to building foundation studies by G. A. Nicoll, Inc. (2000) for the newly constructed Huntington Beach Maintenance Facility (situated approximately 500 feet north of the site), without mitigation these alluvial deposits are considered unsuitable for foundation support due to their compressible nature when placed under structural (i.e. building) loads.

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1 Mr. Phil Jones, Orange County Flood Control District, May 21, 2001.

2 Geotechnical Investigation, Huntington Beach Channel, City of Huntington Beach, County of Orange, California: Consultants Report for Orange County Environmental Management Agency. Prepared by Geosoils, Inc., 1991.

Below this upper layer of highly compressible soils are deposits of sandy coastal alluvial soils that make up the Talbert aquifer. Limited standard penetration test (SPT) data indicate that the uppermost 10 to 16 feet of these sediments are highly susceptible to liquefaction during strong ground motion from nearby seismic sources. Below a depth of approximately 17 to 25 feet below existing ground surface, these alluvial sediments have "N-values" (as derived from SPT data) that are suggestive of soils that are not prone to liquefaction, nor are they considered compressible or subject to collapse under normal structural loads.

There is no current evidence that would suggest the occurrence of soils containing collapsible, organic peat deposits in the vicinity of the project site.

Seismicity/Faulting

The primary seismic hazard to the subject site vicinity is the possibility of ground shaking due to the proximity of major active faults in the Southern California region. A number of concealed faults exist approximately 1.25 miles north of the proposed project site, while the South Branch Fault (a concealed fault which branches from the Newport Inglewood Fault) traverses the northern portion of the subject site (refer to Exhibit 11, *REGIONAL GEOLOGY & SEISMICITY*).

Although the project area is not located within an Alquist-Priolo Earthquake Fault Zone (formerly referred to as "Special Study Zones") as designated by the California Division of Mines and Geology (CDMG)[3], the site is within approximately 1.25 miles of the Newport-Inglewood Fault Zone, an Alquist-Priolo Earthquake Fault Zone. Additional active or potentially active faults in the vicinity include:

- Elsinore Fault - Located 28 miles from the City center and is capable of a magnitude 7.5 earthquake.
- Palos Verdes-Coronado Bank Fault - Located 10 miles from the City center and is capable of a magnitude 7.5 earthquake.
- Raymond Fault - Located 30 miles from the City center and is capable of a magnitude 7.5 earthquake.
- San Andreas Fault - Located 51 miles from the City center and is capable of an magnitude 8.3 earthquake.
- Sierra Madre-San Fernando Fault - Located 32 miles from the City center and is capable of a 7.5 magnitude earthquake.
- Whittier-North Elsinore Fault - Located 19 miles from the City center and is capable of a magnitude 7.5 earthquake.
- Elysian Park Fault - Located 25 miles from City center and is capable of a 7.0 magnitude earthquake.
- Compton Blind Thrust Fault - Located approximately 10 miles from the City center and is capable of a 7.0 magnitude earthquake.

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3 Alquist-Priolo Earthquake Fault Zone Map, issued by the State Geologist, 1986; California Division of Mines and Geology Special Publication 42 (1997).

- Torrance-Wilmington Fault - Located approximately 10 miles from the City Center and is capable of a magnitude 7.0 earthquake.

Newport-Inglewood Fault Zone. The subject site is shown as being approximately 1.25 miles south of the Newport-Inglewood Fault Zone, which is an Alquist-Priolo Earthquake Fault Zone.[4] Alquist-Priolo Earthquake Fault Zones are intended to prohibit the location of developments for human occupancy across the trace of active faults in order to minimize the loss of life and property in the event of an earthquake. The Newport-Inglewood Fault Zone is an active right-lateral fault system consisting of a series of *en echelon*[5] fault segments and anticlinal folds that are believed to be the expression of a deep-seated fault within the basement rock.[6,7,8] The fault zone is visible on the surface as a series of northwest-trending elongated hills, including Signal Hill and the Dominguez Hills, extending from Newport Beach to Beverly Hills. The total fault length is approximately 44 miles. The estimated maximum earthquake magnitude assigned to the fault zone is 6.9Mw (momentum magnitude), based on its estimated rupture length versus magnitude relationship by Slemmons (1982) and its slip rate at 1 ½ millimeter/year (a "Type B" seismic source).

The South Branch Fault, a component of the Newport Inglewood Fault, traverses the northern portion of the project site under the existing "South" fuel oil storage tank. A seismic study performed for the Bolsa Chica Project (located approximately five miles northwest of the proposed desalination plant) indicates that the South Branch Fault is classified as neither active nor potentially active under the Bolsa Chica site.[9] The City of Huntington Beach utilizes their 1996 General Plan and the CDMG's Alquist Priolo Earthquake Fault Zones to develop four categories for faults within the City. The City's General Plan indicates that this fault is a "Category C" fault, requiring special studies and subsurface investigation for critical and important land uses.

In addition, GeoLogic Associates' *Preliminary Geotechnical Assessment, Southeast Reservoir Site Acquisition, Huntington Beach California* (2002) analyzes the potential for fault rupture under two potential City water reservoir tank sites, currently occupied by the existing fuel oil tanks to the north and northwest of the desalination facility site (referred to as the "North" and "West" tanks, respectively). A subsurface stratigraphic correlation/ fault investigation was performed to assess the potential for surface fault rupture within Holocene-age deposits below the potential water tank sites. According to the criteria established by the California Division of Mines and Geology, a fault is considered "active" if it can be demonstrated that the fault has produced surface displacement within Holocene time (about the last 11,000 years). Due to the presence of a relatively thick layer of fill soils and shallow groundwater, conventional fault trenching and soil-stratigraphic techniques could not be employed by GeoLogic Associates to assess the presence of surface fault rupture potential. Instead, their investigation involved the use of cone penetrometer test (CPT) and exploratory borings for stratigraphic correlation purposes, as well as the use of radiocarbon dating

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4 Active Fault Near-Source Zones, California Division of Mines and Geology, map atlas page N-34, February 1998.

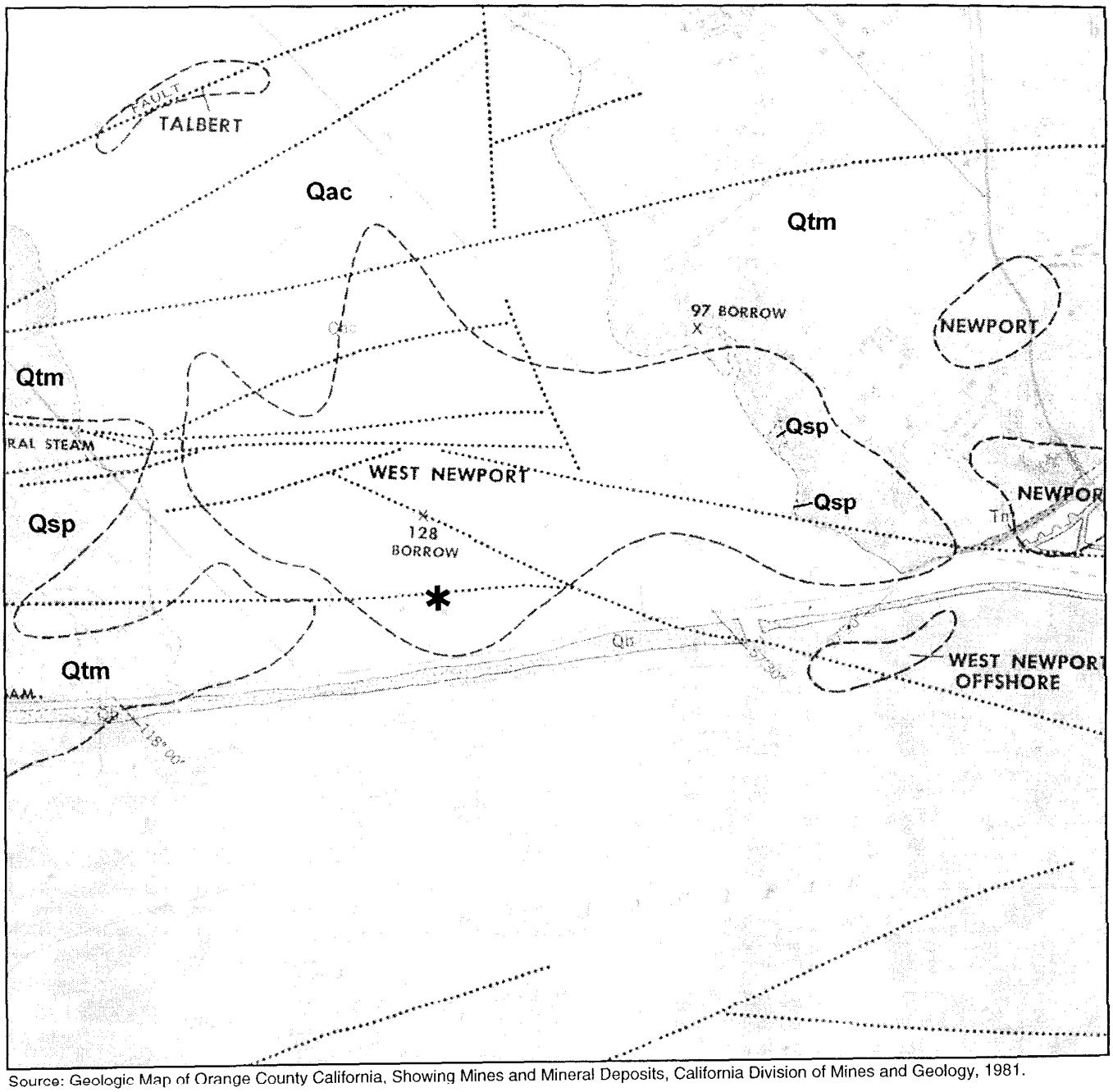
5 Faults that are in an overlapping or staggered arrangement.

6 Convex upward folds with cores containing the stratigraphically older rocks.

7 Bryant, 1988; Barrows, 1974.

8 City of Huntington Beach General Plan EIR, 1995.

9 City of Huntington Beach General Plan EIR, 1995.



Source: Geologic Map of Orange County California, Showing Mines and Mineral Deposits, California Division of Mines and Geology, 1981.

✱ - Project Site

Concealed Fault Lines

Limits of oil and gas fields (California Division of Oil and Gas, 1972).

Qsp

San Pedro Formation

Qac | Qb

Qac = Alluvium and colluvium
Qb = Beach sediments

Qt | Qtm

Terrace deposits
Qt = Nonmarine terrace deposits
Qtm = Marine terrace deposits

POSEIDON SEAWATER DESALINATION PROJECT

Regional Geology and Seismicity

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PLANNING ■ DESIGN ■ CONSTRUCTION

06/02

JN 10-101409

Exhibit 11

of organic sediments and shells obtained from the exploratory borings. According to data collected, no evidence of faulting within Holocene sediments was found beneath either site (i.e. North and West fuel storage tanks). The report concludes that the risk of surface fault rupture is minimal over the lifetime of the City's proposed water reservoir project, yet the stratigraphic correlation on which the assessment was based favors the North tank site. However, as no CPT or exploratory borings were collected specifically for the proposed project site and based on review of the GeoLogic Associates' (2002) soil correlation data, there remains a possibility that the southern half of the proposed desalination facility site may have the potential for surface fault rupture.

Liquefaction/Subsidence Potential

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similar to liquid when subject to intense ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater; 2) low density silty or fine sandy soils; and 3) high-intensity ground motion. Liquefaction occurs when the dynamic loading of a saturated sand or silt causes pore water pressures to increase to the point where grain-to-grain contact is lost and the material temporarily behaves as a viscous fluid. Liquefaction can cause settlement of the ground surface, settlement and tilting of engineered structures, flotation of buoyant buried structures and fissuring of the ground surface. A common trait of liquefaction is formation of sand boils - short lived fountains of soil and water that emerge from fissures or vents and leave freshly deposited conical mounds of sand or silt on the ground surface. The City of Huntington Beach General Plan designates the project area as having a "Very High" potential for liquefaction. In addition, the Seismic Hazards Zones Map prepared by the State Geologist (April 7,1997) shows the site as an "Official Liquefaction Zone".[10] In addition, due to the relatively loose, unconsolidated nature of near surface soils on-site, there is a moderate to high potential for earthquake-induced ground settlement and subsidence.

According to building foundation studies by G. A. Nicoll, Inc. (2000) for the newly constructed Huntington Beach Maintenance Facility (situated approximately 500 feet north of the desalination facility site), the uppermost 13 feet of the native Holocene deposits are considered unsuitable for foundation support due to their compressible nature when placed under structural (i.e. building) loads. Limited standard penetration test (SPT) and cone penetrometer test (CPT) data (by G. A. Nicoll, Inc., 2000; and GeoLogic Associates, 2002 for the Beach Maintenance Facility and the City's Southeast Reservoir sites, respectively) indicate that the uppermost 10 to 16 feet of the native sediments are highly susceptible to liquefaction during strong ground motion from nearby seismic sources. According to the study performed by GeoLogic Associates (2002), the soil layers susceptible to liquefaction were not continuous beneath the City's Southeast Reservoir site. Below a depth of about 17 to 25 feet, the native sediments have "N-values" (as derived from SPT and CPT data) that are suggestive of soils that are not prone to liquefaction. Soils below 17 to 25 feet are not considered compressible or subject to collapse under normal structural loads although some deeper sand lenses may be subject to liquefaction.

Lateral Spread

Lateral spreading involves the dislocation of the near surface soils generally along a near-surface liquefiable layer. In many cases, this phenomenon of shallow landsliding occurs on relatively flat or gently sloping ground adjacent to a "free face", such as an unsupported channel wall along a stream or flood control channel. Given the "weak" nature of near surface soils, fine-grained

[10] Seismic Hazard Zones Map, April 7, 1997, prepared by the State Geologist.

sediments, shallow groundwater, liquefaction-prone soils, and the nearby flood control channel, there is a high potential for lateral spread beneath the site during a major earthquake in the area. In addition, the sheet-piles that are to be installed along the sides of the Huntington Beach Channel by the OCFCD are not designed to resist liquefaction or lateral loads that could occur as the result of a lateral spread.[11]

Landslides

Potential landslide areas within the City of Huntington Beach are limited primarily to the mesa bluffs region. However, the potential for seismically induced landsliding along the levee of the neighboring Huntington Beach Channel is considered moderate to high. As stated above, the new sheet-pile walls that are to be constructed along the interior walls of the levee are not designed to withstand potentially large lateral forces associated with strong ground motion from a nearby earthquake.

Tsunamis and/or Seiche Waves

Tsunamis are long period sea waves that are seismically generated by seafloor displacements. Previous evaluations put the tsunami potential for the City of Huntington Beach at very low. Of more concern are seiche waves caused by tsunamis captured and reflected within the enclosed area of an inner harbor, such as Huntington Harbour. Seiche area damage is most severe in the same area as tsunami hazards. However, the project site is not in the immediate vicinity of a harbor. There is a potential for seiches to impact the subject site, as it is situated adjacent to the Huntington Beach Channel. The magnitude of seiche waves impacting the project site are anticipated to be lower than that of a tsunami, given the frictional energy dissipation of water running along the bottom and walls of the Channel. In addition, given that the existing 10 to 15-foot high containment berm along the eastern boundary of the project site would remain (running along the Huntington Beach Channel), the likelihood of seiches or tsunamis impacting the site is considered low. Impacts in this regard are anticipated to be less than significant.

Groundwater/Percolation and Drainage

The subject site rests over the Talbert Aquifer, and is in a designated tidal flats region, characterized by poor drainage. Groundwater beneath the site fluctuates with the tidal cycles and the water level within the neighboring Huntington Beach Channel. Due to this interconnection, groundwater quality beneath the site is considered brackish. The site is underlain by shallow near surface water with depths ranging from five to seven feet under the surface within the project site vicinity.[12] This condition contributes to the vicinity's very high liquefaction potential.

Off-Site Pipelines and Underground Pump Station

The proposed off-site product water delivery pipelines will be located primarily within existing roads or easements, generally flat. The pipeline alignment would traverse a wide range of surficial soils with varying characteristics and qualities, as the pipeline's length would be between approximately 30,000 and 40,000 linear feet. As with the desalination plant site, the off-site facilities are subject to typical seismic hazards of southern California. Shallow groundwater may be encountered along

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[11] Mr. Phil Jones, Orange County Flood Control District, May 21, 2001.

[12] Huntington Beach Generating Station Phase II Environmental Site Assessment, CH2M

the pipeline alignment nearby the proposed desalination facility, depending on the depth of trenching for pipeline implementation.

The proposed underground booster pump station site would occur within an unincorporated portion of the County of Orange, within a Resource Preservation Easement. The pump station site rests at an approximate elevation of 200 feet above mean sea level. The surrounding terrain can be characterized as hilly, although much of the surrounding vicinity has been graded for residential development. Bedrock beneath the subject site belongs to the diabase intrusive volcanic formation, overlain by Calleguas clay loam soil. This soil is characterized as being well drained and moderately permeable. It should be noted that the site is within a designated Zone of Required Investigation for liquefaction hazards, and has demonstrated either a historic occurrence of liquefaction or local geological, geotechnical, and groundwater conditions indicate a potential for liquefaction.[13] The subject site is not situated within an Alquist-Priolo Earthquake Fault Zone or earthquake-induced landslide Zone of Required Investigation as designated by the CDMG.[1, 14] As the pump station site is situated approximately 3.5 miles from the Pacific Ocean, inundation by tsunamis and/or seiche waves is not expected to occur.

IMPACTS

Significance Criteria

Based on the criteria set forth by CEQA, a project may create a significant geological environmental impact if one or more of the following occurs:

- ❖ Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issues by the California Division of Mines and Geology for the area or based on other substantial evidence of a known fault;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction;
  - Landslides;
- ❖ Result in substantial soil erosion or the loss of topsoil;
- ❖ Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- ❖ Be located on expansive soils, as defined in Table 18-1 B of the Uniform Building Code (1994), creating substantial risks to life or property;
- ❖ Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

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13 Seismic Hazard Zones, Tustin Quadrangle, Official Revised Map. California Department of Conservation, Division of Mines and Geology, January 17, 2001.

14 Alquist-Priolo Earthquake Fault Zone Map, issued by the State Geologist, 1986; California Division of Mines and Geology Special Publication 42 (1997).

WIND/WATER EROSION

It is anticipated that the entire subject will be either landscaped or paved, thereby reducing the likelihood for long-term operational wind/water erosion impacts to less than significant levels. However, the project would involve construction processes possibly causing wind and water erosion to occur during grading activities. The project will be subject to standard erosion control practices as typically required by the City of Huntington Beach. Any potential temporary increase in wind/water erosion will be reduced to less than significant levels with implementation of standard grading practices such as use of sandbags along the site perimeter (also refer to Section 4.3, *HYDROLOGY AND WATER QUALITY*, and Exhibit 14, *CONCEPTUAL LANDSCAPE PLAN*).

TOPOGRAPHY

The proposed desalination plant site consists of three fuel storage tanks on a flat surface, surrounded by soil containment berms of 10 to 15 feet in height. The western and southern berms would be removed prior to construction of the desalination plant, while the eastern berm (the northern berm exists outside of the project boundaries) will not be removed. The site does not contain any other unique physical or topographical features. No significant landform impacts are anticipated.

GEOLOGY/SOILS

As shallow groundwater exists on-site (at a depth of approximately five to seven feet below ground surface), saturated soils and caving conditions would be encountered during removal and excavation for the proposed underground product water storage tank or any other grading/excavation below the groundwater table level. This would necessitate dewatering operations as well as lateral support for the sides of the excavation pit. All dewatering activities would comply with National Pollution Discharge Elimination System (NPDES) regulations, and pumped groundwater would be sampled, tested, and treated, if necessary (refer to Section 4.9, *CONSTRUCTION RELATED IMPACTS* for more information regarding dewatering). In addition, the proposed underground product water storage tank will either utilize piles, weighting, and/or a soil surcharge over the top of the tank to prevent the tank from "floating" when water levels in the tank are lowered.

As the uppermost 17 feet of native soils within project site boundaries are considered compressible upon placement of structural loads (aboveground storage tank, buildings, etc.), project implementation would require either the complete removal and recompaction of compressible soils or the use of piles and grade beams to support the structure. In addition, Type V cement will be used for concrete and special coatings or other measures for metal pipes to protect against the effects of corrosion.

A detailed geotechnical survey will be performed during the design phase of the proposed project. This survey will further characterize on-site soil and groundwater conditions and will determine the site's soil bearing capacity. This information would be used to develop a detailed foundation design for on-site structures. With implementation of recommended mitigation measures, and adherence to the Uniform Building Code (UBC), impacts in this regard are anticipated to be less than significant (also refer to Section 4.9, *CONSTRUCTION-RELATED IMPACTS*).

SEISMICITY/FAULTING

CPT and exploratory boring data performed for the City's Southeast Reservoir Site Acquisition by GeoLogic indicates that surface fault rupture potential is minimal beneath the two sites analyzed and the northern portion of the proposed desalination plant site. However, as part of the detailed geotechnical survey to be performed for the proposed project, a subsurface fault investigation (similar to that performed by GeoLogic) will be performed to assess the potential for surface rupture across the subject site. Should such potential exist, an appropriate setback distance for structures from the zone of surface faulting will be incorporated into site design.

Although the northern portion of the project site overlays the South Branch Fault, the site is not situated within an Alquist-Priolo Earthquake Fault Zone. The proposed project will be constructed in compliance with the seismic safety requirements of the Uniform Building Code (UBC) and applicable CDMG publications. Given the site's close proximity to the Newport-Inglewood and Compton Blind Thrust Faults, more stringent design measures may be warranted or required, as determined by the site specific geotechnical survey for the project. All grading and building plans will be subject to City of Huntington Beach review and approval. Impacts in this regard are expected to be less than significant with implementation of recommended mitigation measures and the required site-specific geotechnical investigation.

LIQUEFACTION POTENTIAL

The uppermost 16 feet of native soils in the project area are highly susceptible to liquefaction and up to approximately four to six inches of seismically-induced settlement. Proposed on-site aboveground structures have the potential to experience post-liquefaction distress. In addition, the presence of liquefaction-prone soils and the location of the subject site relative to the Huntington Beach Channel poses a risk of seismically induced lateral spread. Substantial distress to both above and underground structures would occur in the form of seismically-induced landsliding. However, as stated above, a site specific detailed geotechnical study will be prepared for the proposed project site, which will recommend measures to mitigate liquefaction and lateral spread impacts such as: 1) overexcavation and recompaction of liquefaction/lateral spread-prone soils; 2) in-situ soil densification; 3) injection grouting; or 4) deep soil mixing. The desalination plant project will be subject to the Uniform Building Code (UBC) and applicable CDMG publications in regards to liquefaction. Upon adherence to applicable regulations and the incorporation of mitigation measures, Impacts in this regard are expected to be less than significant.

OFF-SITE PIPELINES AND UNDERGROUND PUMP STATION

The proposed product water delivery pipeline is not anticipated to result in significant impacts in regards to geology and soils, as the majority of the alignment would occur within existing street right-of-way and various utility lines currently exist along the alignment. Pipeline construction would be subject to standard erosion control measures similar to those implemented for the desalination facility site to contain any potential wind and water erosion on-site. As the pipeline alignment is relatively flat and has been graded, impacts to natural topography are not anticipated. A design-level geotechnical investigation will be performed for the selected pipeline alignment to examine the potential for earthquake shaking hazards, surface rupture, shallow groundwater, and unstable soils (liquefaction, subsidence, lateral spread). Should the potential for such geological hazards exist, adequate mitigation for both pipeline construction and pipeline design will be incorporated to mitigate impacts in this regard to less than significant levels. Also refer to Section 4.9, *CONSTRUCTION RELATED IMPACTS* for a more detailed evaluation of pipeline construction.

Construction of the proposed off-site underground booster pump station would also be subject to standard erosion control measures as required by local, state, and federal regulations to contain any potential wind and water erosion on-site. As the site is relatively flat and is only approximately 0.5 acres in size, impacts to the natural topography of the site and surrounding vicinity are not anticipated. A design-level, site specific geotechnical study will be prepared for the underground pump station and will incorporate adequate mitigation measures (if deemed necessary) for geological hazards such as seismic shaking, surface rupture, shallow groundwater, liquefaction, subsidence, lateral spread, and landslides. As the underground pump station would require excavation to a depth of approximately 40 feet, lateral bracing for the sides of the chamber may be necessary as the site is in a designated liquefaction hazard zone.[15] Upon the implementation of both standard and recommended mitigation measures, impacts in regards to geology and soils are not anticipated to be significant.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

The optional "West" and "North" storage tanks sites are currently developed with fuel oil storage tanks formerly used in conjunction with operation of the AES Huntington Beach Generating Station. The two optional sites lie at an elevation of approximately five to seven feet above mean sea level, and are surrounded on all sides by containment berms between 10 to 15 feet in height. The Huntington Beach Channel lies in a northwesterly/southeasterly direction to the north and east of the optional tank sites (refer to Exhibit 2, *SITE VICINITY MAP*). The "West" and "North" tank sites slope gently to the east and west, respectively. As the optional tank sites exist within approximately 500 feet north/northwest of the proposed desalination facility site, surrounding topography features are the same for both the aboveground and belowground storage tank options, as described previously.

The only site specific geotechnical information available for the optional "West" and "North" water storage tank sites is the "Preliminary Geotechnical Assessment, Southeast Reservoir Site Acquisition, Huntington Beach, California", prepared by GeoLogic Associates (May 24, 2002). As existing conditions in regards to geology/soils, seismicity/faulting, liquefaction/subsidence, lateral spread, landslides, and tsunamis/seiche waves are similar to those of the proposed desalination facility, impacts are anticipated to be generally the same. Based on conclusions reached in the geotechnical assessment performed by GeoLogic Associates (2002) for the City's Southeast Reservoir Site Acquisition, it is anticipated that the proposed optional product water storage tank could be supported by a conventional concrete map type foundation, provided provision is made to accommodate anticipated settlements due to existing saturated, soft soils and liquefaction. Soil conditions would not preclude the use of other foundation systems, however, which would be evaluated when design concepts are available. While the amount of excavation would be substantially less for the aboveground tank option in comparison the proposed project, dewatering may still be necessary during construction, as shallow groundwater exists beneath both optional tank sites. In addition, as stated previously, the GeoLogic Associates (2002) study concluded that the potential for surface rupture below the area occupied by the "West" and "North" fuel oil tanks is minimal.

Similar to the proposed project, implementation of the aboveground product water storage tank option would require a site/project specific detailed geotechnical investigation to adequately analyze

[15] Seismic Hazard Zones, Tustin Quadrangle, Official Revised Map. California Department of Conservation, Division of Mines and Geology, January 17, 2001.

hazards in regards to geology and soils. Upon adherence to standard construction measures and the UBC, as well as mitigation measures recommended in the site/project specific detailed geotechnical study to be prepared for the option and provided below, impacts are anticipated to be less than significant in this regard.

MITIGATION MEASURES

WIND/WATER EROSION

Refer to Section 4.3, *HYDROLOGY AND WATER QUALITY*, mitigation measure HWQ-1.

TOPOGRAPHY

None required.

GEOLOGY/SOILS

GEO-1 A detailed geotechnical report shall be prepared and submitted with the building permit application for the proposed desalination plant. This analysis shall include on-site soil sampling and laboratory testing of materials to provide detailed recommendations regarding grading, foundations, retaining walls, streets, utilities, remedial work, overexcavation/recompaction, dewatering, water quality, and chemical/fill properties of underground items including buried pipe and concrete and protection thereof. The reports shall specifically address lateral spreading, flood control channel bank stability, liquefaction potential and groundwater constraints. Appropriate recommendations shall be provided to mitigate potentially adverse conditions. The geotechnical report shall also be submitted to the Department of Public Works for review and approval in conjunction with the grading plan.

GEO-2 In conjunction with the submittal of application for preliminary or precise grading permits, the Applicant shall demonstrate to the satisfaction of the City Engineer that the preliminary geotechnical report recommendations have been incorporated into the grading plan unless otherwise specified in the final geotechnical report and/or by the City Engineer.

GEO-3 Excavation for the proposed underground product water storage tank shall implement dewatering activities in compliance with NPDES regulations. Pumped groundwater shall be sampled, tested, and (if deemed necessary) treated prior to discharge.

GEO-4 In order to prevent the underground product water storage tank from "floating" when water levels in the tank are lowered, the tank shall be either "anchored" utilizing piles, weighted, and/or have adequate soil placed across the top of the tank to hold the tank in place within shallow groundwater known to exist within subject site boundaries.

GEO-5 As native on-site soils are compressible upon placement of structural loads, project implementation shall implement complete removal and recompaction of compressible soils or use of piles and grade beams to support on-site structures.

GEO-6 Type V cement shall be used for concrete and buried metal pipes shall utilize special measures (coatings, etc.) to protect against the effects of corrosive soils.

SEISMICITY/FAULTING

GEO-7 Due to the potential for ground shaking in a seismic event, the project shall comply with the standards set forth in the UBC (most recent edition) to assure seismic safety to the satisfaction of the Department of Building and Safety prior to issuance of a building permit, including compliance with California Division of Mines and Geology Special Publication 117 (Guidelines for Evaluating and Mitigating Seismic Hazards in California, adopted March 13, 1997). However, given the proximity of the site to the Newport-Inglewood and Compton Blind Thrust Faults, more stringent measures may be warranted.

GEO-8 As the South Branch Fault (situated beneath the subject site) is classified as "Category C" by the City of Huntington Beach General Plan, special studies and subsurface investigation (including a site specific seismic analysis) shall be performed prior to issuance of a grading permit, to the approval of the City Engineer. The subsurface investigation shall include CPT and exploratory borings to determine the fault rupture potential of the South Branch Fault which underlies the subject site.

LIQUEFACTION POTENTIAL

GEO-9 Due to the potential for liquefaction within the project vicinity, the Applicant shall comply with the standards set forth in the UBC (most recent edition) for structures on-site to assure safety of the occupants to the satisfaction of the Department of Building and Safety prior to issuance of a building permit. These standards include compliance with California Division of Mines and Geology Special Publication 117 (Guidelines for Evaluating and Mitigating Seismic Hazards in California, adopted March 13, 1997) and "Recommended Procedures for implementation of CDMG Special Publication 117 - Guidelines for Analyzing and Mitigating Liquefaction in California" (Dr. Geoffrey R. Martin et al, May 1999).

GEO-10 The proposed project shall incorporate adequate measures to stabilize structures from on-site soils known to be prone to liquefaction. Typical methods include, but are not limited to:

- ❖ overexcavation and recompaction of soils;
- ❖ in-situ soil densification (such as vibro-flotation or vibro-replacement);
- ❖ injection grouting; and
- ❖ deep soil mixing.

GEO-11 The site specific geotechnical investigation for the proposed project shall analyze the potential for lateral spread on-site. If deemed a possibility, adequate subsurface stabilization practices (similar to those utilized for liquefaction) shall be incorporated prior to the construction of on-site structures.

OFF-SITE PIPELINES AND UNDERGROUND PUMP STATION

Refer to Section 4.9, *CONSTRUCTION RELATED IMPACTS.*

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.3 HYDROLOGY AND WATER QUALITY

Information in this section was compiled from a site survey conducted by RBF Consulting on June 22, 2001; Hydrodynamic Modeling of Source Water Make-Up and Concentrated Seawater Dilution for the Ocean Desalination Project at the AES Huntington Beach Power Station, Part I: Analysis of Issues to Receiving Water (2001), prepared by Dr. Scott A. Jenkins Consulting; Hydrodynamic Modeling of Source Water Make-Up and Concentrated Seawater Dilution for the Ocean Desalination Project at the AES Huntington Beach Power Station, Part II: Analysis of Issues to Source Water (2002), prepared by Dr. Scott A. Jenkins Consulting; Watershed Sanitary Survey Report (2002), prepared by Archibald and Wahlberg Consultants; the Water Quality Control Plan for the Santa Ana River Basin (8) (1995) by the California Regional Water Quality Control Board Santa Ana Region; the California Ocean Plan (1997) prepared by the State Water Resources Control Board; Existing Conditions for the Proposed Poseidon Desalination Project at Huntington Beach, California and Effects of a Concentrated Seawater Discharge on the Marine Environment of Huntington Beach, California prepared by MBC Applied Environmental Services; and the Drainage Area Management Plan (1994) prepared by the State Water Resources Control Board.

EXISTING CONDITIONS

The proposed project site is located within the Santa Ana River Basin. The Santa Ana River empties into the Pacific Ocean approximately 1.5 miles downcoast (southeast) of the subject site. The flow of the Santa Ana River is intermittent and only substantial during storms. Long-term annual precipitation near the coast averages about 18.1 inches, of which 90% occurs between November and April. The Pacific Ocean lies approximately 2,000 feet south of the project site. The coast near the proposed project site is fronted by a broad, sandy beach and is backed by lowlands. The sea floor directly offshore is relatively smooth, with isobaths following the coastline. Offshore sediments range from fine to medium sand near-shore to sandy silt at a distance of about one mile from shore. The beach sands are normally transported southeastward by littoral currents which are generated by incoming waves and modified by seafloor topography.

An approximately 131-acre wetland area is located southeast of the proposed project site, along a 1.5 mile stretch of Pacific Coast Highway. The wetlands are divided into two major components. To the southeast, the 17-acre Talbert Marsh opens to the ocean through a 100-foot wide entrance adjacent to the mouth of the Santa Ana River, approximately 1.3 miles downcoast (southeast) of the subject site. The Talbert Marsh is a recovering wetland area reintroduced to tidal influence in 1989. The second component of the wetland area is separated from the Talbert Marsh by Brookhurst Street, and includes 89 privately-owned acres directly southeast of the project site. This wetland area does not have tidal access, and water sources are limited to rainfall, urban runoff, and groundwater seepage. Salinities are extremely high in the soils and seasonal ponds, water quality of the brackish water marsh is poor, and the wetland area in general is considered degraded.

Off-Site Drainage

The proposed project site is situated within the Santa Ana River Basin, which has a total drainage area of approximately 1,700 square miles. In general terms, the Santa Ana River Basin is a group

of connected inland basins and open coastal basins drained by surface streams flowing generally southwestward to the Pacific Ocean.[1]

The general topography of the project site vicinity slopes gently to the southwest, towards the Pacific Ocean. Runoff upstream and downstream of the subject site generally follows this slope, emptying into one of the three primary drainage facilities in the region, which consist of the Huntington Beach Channel, the Talbert Channel, and the Santa Ana River. All three drainage facilities are owned and operated by the Orange County Flood Control District (OCFCD). All surface runoff within the vicinity of the project site eventually flows into the Pacific Ocean. A segment of Huntington Beach Channel is proposed to be improved by the OCFCD so as to effectively double flow capacity (the Channel currently lacks 100-year flood protection capabilities). Metal sheet pile walls would be placed on either side to expand the Channel's basewidth from approximately 30 to 85 feet. The project site would obtain 100-year regional flood protection upon completion of these channel improvements.

On-Site Drainage

As previously stated, the project site is completely surrounded by containment berms of approximately 10 to 15 feet in height as a precaution against accidental fuel oil spillage. These berms prevent on-site stormwater from leaving project site boundaries. Stormwater collects within the storage tank area and either evaporates or percolates into the ground. In times of heavy rainfall, stormwater is either released through the manual valve of a drain line or is first tested for pollutants, and, if found to satisfactorily meet regulatory criteria, is pumped into the adjacent Huntington Beach Channel operated by the OCFCD, ultimately emptying into the Pacific Ocean.[2]

Water Quality (Groundwater)

The lower part of the Holocene age sediments beneath the proposed project site consists of layered lenses of coarse sand and gravel known as the Talbert aquifer. A relatively impermeable cap of interbedded silts and clay up to about 15 feet thick overlies the Talbert aquifer. Given the proximity of the site to the Pacific Ocean, and its interconnection with the nearby Huntington Beach Channel, depth to groundwater within the site vicinity is between five to seven feet. The actual elevation of the groundwater table fluctuates with the ocean tides and water level in the adjacent neighboring flood control channel. Due to this interconnection, groundwater quality is considered brackish.

Water Quality (Surface Water)

As mentioned above, stormwater at the site is allowed to either evaporate, percolate into the ground, drained via a manual valve, or is pumped in to the OCFCD flood channel adjacent to the project site. No beneficial uses for surface water exist on site. Existing site runoff for the project

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1 Water Control Management Plan, Santa Ana River Basin (8), Santa Ana Regional Water Quality Control Board, 1995.

2 Han Tan, AES Huntington Beach, June 22, 2001.

vicinity contains moderate amounts of pollutants typical of urban areas, including oil and grease from automobiles, as well as incidental fertilizer and pesticides from routine maintenance of existing vegetation.

Water Quality (Ocean)

The Pacific Ocean is located approximately 2,000 feet south of the proposed project site, along Huntington State and Huntington City Beaches. Source water for the proposed desalination facility will be taken from the existing condenser cooling water circulation system from the AES facility intake. Up to 507 mgd of cooling seawater presently flows to the AES plant through an existing ocean water intake structure located approximately 2,292 feet offshore. The Santa Ana River flows into the Pacific Ocean approximately 8,300 feet from the AES intake, while the Talbert Channel discharges into the ocean approximately 1,300 feet upcoast (northwest) from the mouth of the Santa Ana River. The Orange County Sanitation District (OCSD) deep ocean sewage outfall is located five miles offshore of the Santa Ana River at a depth of 195 feet (refer to Exhibit 12, *LOCATION MAP OF LOCAL SURFACE AND WASTEWATER DISCHARGES*). Bacteria levels are the primary Pacific Ocean water quality concern in the project vicinity.

Recently, Huntington Beach has experienced several closures of the water area adjacent to the beach. The closures have been due to levels of bacteria in the surf zone that have exceeded the State standard. These closures have prompted a series of studies in order to find the source of contamination that is causing bacteria levels in the surf zone to exceed State standards.

Off-Shore Marine Environment

Natural water temperatures in the Pacific Ocean fluctuate throughout the year in response to seasonal and diurnal variations in currents as well as meteorological factors such as wind, air temperature, relative humidity, cloud cover, ocean waves, and turbulence. Diurnally, natural surface water temperatures generally vary one to two degrees celsius in the summer and 0.3 to 1 degree celsius in the winter. Reasonably sharp thermoclines (differences between surface and bottom water temperatures) are known to occur in the nearshore waters of Huntington Beach at a depth of 12 to 15 meters during the summer, and are typically absent during the winter. Salinities in the area are fairly uniform and normally range from 33.0 to 34.0 parts per thousand (ppt), while levels of dissolved oxygen range from approximately five to 13 milligrams per liter (mg/l).

Surveys ocuring from 1975 - 2000 of the benthic (ocean floor) macrofaunal assemblages on and in the sandy subtidal area offshore the AES facility indicate that a core group of species persists in the area, although interannual variation is evident. Approximately 90 percent of the observed marine wildlife in the project site vicinity consists of three polychaete annelids (*Diopatra, Owenia,* and *Maldanidae*), hermit crabs (*Paguridea*), and Pacific sand dollars (*Dendraster excentricus*). A long-term total of 33 macrofaunal species were found during 26 annual surveys, with a range of 21 species in 1975 and 1980 to 54 species in 1984. Temporal fluctuations in abundance and diversity of some macrofaunal species are the norm for the shallow water communities on the mainland shelf of Southern California. Variation in abundance from year to year is probably due to a combination of environmental oceanographic disturbances, such as changes in water

temperature, or storms which cause differences in water movement that affects the substrate and the resulting sediment characteristics.

Although there has been variability in fish abundance since 1978 offshore of the AES facility, interannual comparison of relative abundance shows that composition of the fish community in the study area has remained fairly consistent over time. Although fluctuations occur, the northern anchovy (*Engraulis mordax*), queenfish (*Seriphus politus*), and white croaker (*Genyonemus lineatus*) are the most abundant fish species offshore of the subject site. Other pelagic species (species occurring within the water column) include shrimp, phytoplankton, zooplankton, and ichthyoplankton (refer to Table 4.3-1, *CORE MARINE SPECIES KNOWN TO OCCUR NEARBY THE EXISTING AES OUTFALL*).

Table 4.3-1
CORE MARINE SPECIES KNOWN TO OCCUR NEARBY THE EXISTING AES OUTFALL

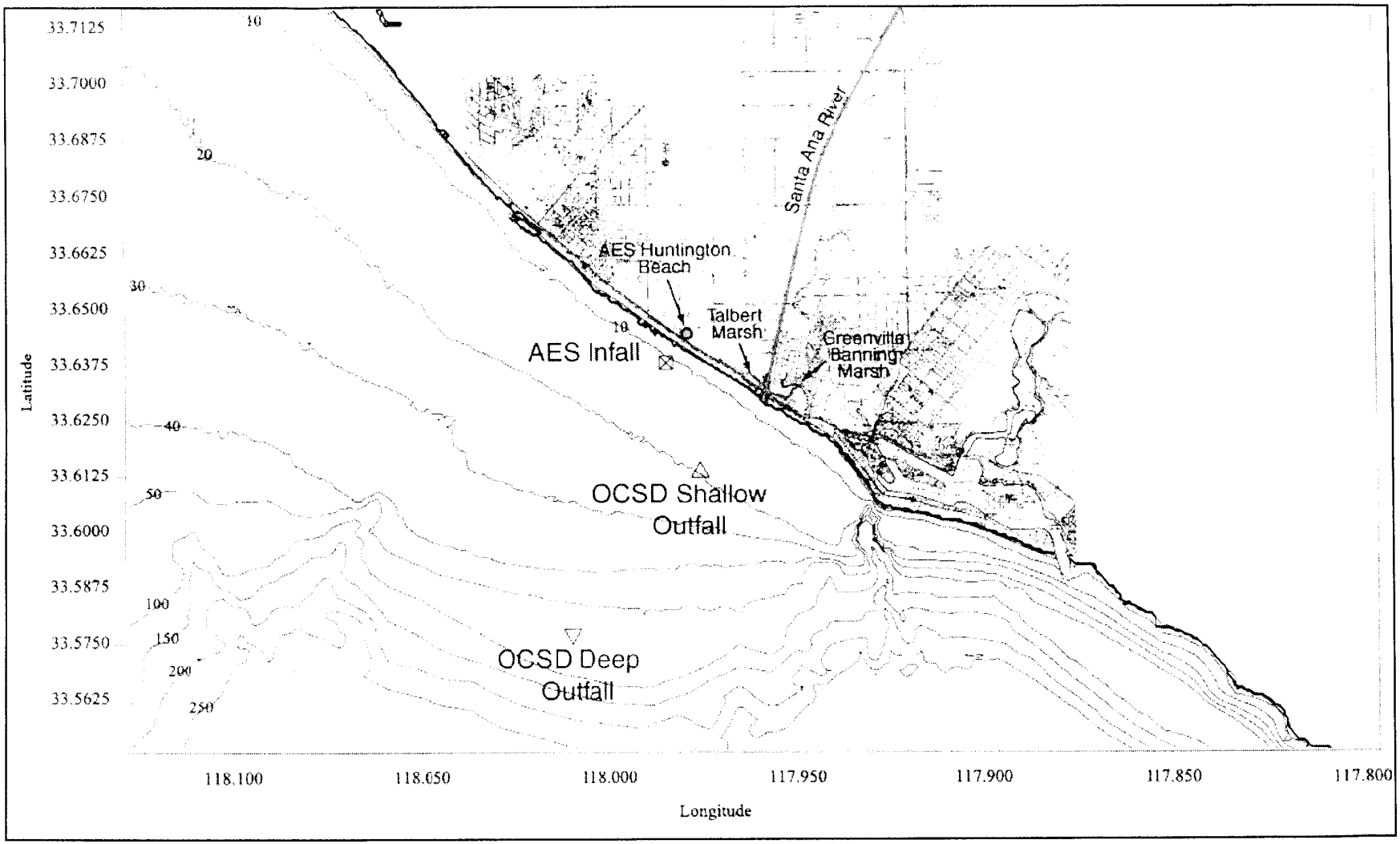
Benthic Macrofauna	Fish
Diopatra cuprea Plumed worm	*Engraulis mordax* Northern Anchovy
Owenia fusiformis Tube worm	*Seriphus politus* Queenfish
Maldanidae Bamboo worms	*Genyonemus lineatus* White croaker
Paguridea Hermit crabs	
Dendraster excentricus Pacific sand dollar	

Source: Effects of a Concentrated Seawater Discharge on the Marine Environment of Huntington Beach, California, prepared by MBC Applied Environmental Services, January 29, 2002.

Note: Although variability of species nearby the AES outfall is known to occur, this table represents species consistently found in substantial quantities in surveys conducted from the mid-1970's to 2000.

Existing and Potential Beneficial Uses

Based on the Water Quality Management Plan (WQMP) for the Santa Ana River Basin, the Pacific Ocean's nearshore waters in the project site vicinity serve multiple beneficial uses. Existing beneficial uses within the coastal vicinity include: industrial service supply, navigation, contact water recreation (swimming, diving), non-contact water recreation (sailing, tide pool studies, aesthetic enjoyment, etc.), commercial and sport fishing, wildlife habitat support, rare/threatened/endangered species habitat support, spawning/reproduction/development habitat support, marine habitat, and shellfish harvesting. No "potential uses" for the project vicinity (as categorized within the WQMP) have been recorded.



Source: Poseidon Resources Corporation, August 2002.

POSEIDON SEAWATER DESALINATION PROJECT

Location Map of Local Surface and Wastewater Discharges

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Exhibit 12

Marine Water Quality Objectives

The objectives for marine water quality are extensively defined in the California Ocean Plan and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California. Based on the known existing and future uses of the site the following water quality goals and objectives apply:

- **Thermal Plan**: The terms and conditions of the State Board's "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (Thermal Plan) and any revisions thereto are incorporated into this basin Plan by reference. The terms and conditions of the Thermal Plan apply to the Inland Surface Waters, Enclosed Bays and Estuaries, and Coastal lagoons within this Region.

- **Bacterial Characteristics:** Samples of water from each sampling station shall have a density of total coliform less than 1,000 per 100 ml (10 per ml), provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 per ml). In addition, the fecal coliform density based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml. For all areas where shellfish may be harvested for human consumption, as determined by the Regional Board, the median total coliform density shall not exceed 70 per 100 ml, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

- **Physical characteristics:** Ocean waters shall be free of visible floating particulates, grease, oil, and discoloration. Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste. In addition, the rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

- **Chemical Characteristics:** The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally as a result of the discharge of oxygen demanding waste materials, while the pH shall not be changed at any time more than 0.2 units from that which occurs naturally. In addition, the amounts of dissolved sulfide, nutrient materials, and harmful substances in marine sediments shall be limited so as not to negatively impact marine life.

- **Biological Characteristics:** Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded. In addition, the natural taste, odor, and color of marine resources used for human consumption shall not be altered, nor shall the concentration of organic materials bioaccumulate to levels that are harmful to human health.

- **Radioactivity:** Discharge of radioactive waste shall not degrade marine life.

IMPACTS

Significance Criteria

Under the CEQA Guidelines a project may be considered to have a significant environmental effect if it will:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami, or mudflow.

Impacts in regards to long-term water quality are discussed below. As the proposed off-site pipeline alignment and underground pump station would be subsurface, there are no anticipated long-term impacts to hydrology and water quality. A discussion of short-term construction-related impacts in regards to hydrology and water quality is included in Section 4.9, *CONSTRUCTION RELATED IMPACTS.*

LONG-TERM WATER QUALITY IMPACTS

Fertilizer and Pesticides

It is anticipated that the proposed desalination project will incorporate both native and non-native landscaping on-site. Non-native vegetation may require periodic fertilization and pest control. The use of fertilizers and pesticides would comply with City standards as well as the guidelines set forth in the Orange County Management Guidelines for such activities. Based on the size of the landscaped areas, the small amounts of fertilizers and pesticides needed, and the fact that the site landscape will be maintained per local and County standards, it is unlikely that use of these chemicals will be of environmental concern to the groundwater, adjacent ocean waters, or surrounding uses. Therefore, this is not considered a significant impact. However, a Water Quality Management Plan (WQMP) will be prepared for the proposed project, which will identify applicable Best Management Practices (BMPs) and control measures as identified within the Countywide National Pollution Discharge Elimination System (NPDES) Drainage Area Management Plan (DAMP).

Flooding

The proposed project is currently designated with a Federal Emergency Management Agency (FEMA) flood zone designation of "X" (proposed improvements to the adjacent Huntington Beach Channel, upon completion, would further reduce the floodplain in the southeastern portion of the City). However, the City's Local Coastal Program designates the project site as being situated within an area prone to "Flooding with Wave Action". In addition, the open space/wetland area to the southeast of the subject site routinely stores runoff, resulting in high water levels during storm events which could potentially impact the site. Appropriate hydrology and hydraulic analysis will be performed to determine if the site has adequate drainage.

Storm Water Drainage

The proposed grading activities and development of the proposed project site are anticipated to increase the amount of impervious area, thereby increasing surface runoff. In addition, existing containment berms (which contain storm water on-site) along the western and southern boundaries of the subject site will be removed (berms to the north of the subject site and along the eastern border of the site will remain in place). An on-site local storm water drainage system would be implemented as part of the desalination facility site. The subject site would be divided into two areas (north and south), with catch basins and a storm water pump station located in each area. Storm water flows would first be directed to catch basins by gravity, and would then be directed to a storm water pump via gravity lines. The water would then be pumped to the 48-inch by-product brine discharge line that ultimately connects to the AES outfall line. As alternative options, the desalination facility's on-site storm water system could discharge storm water to the AES on-site storm water system or the City of Huntington Beach local storm water system, both of which ultimately convey storm water to the Pacific Ocean via the AES outfall. No storm water would be discharged into the adjacent Huntington Beach Channel. A Water Quality Management Plan (WQMP) will be completed for the proposed project as required by the Regional Water Quality Control Board (RWQCB).

If necessary, storm water will be treated prior to off-site discharge in order to minimize impacts from urban pollutants. One of two sedimentation methods will be utilized for treatment, including:

- **Waste Filter Backwash Clarifiers:** The proposed desalination project facility would utilize clarifiers for the purpose of settling the waste stream generated during the backwash of the pretreatment filters. During rainy events, storm water would be combined with the waste filter backwash water and settled in the filter backwash clarifiers. This clarified water would then be combined with the desalination plant's concentrated seawater discharge and sent to the Pacific Ocean via the AES outfall. The waste filter backwash clarifiers would be oversized to accommodate the treatment of storm water.

- **Sedimentation in Separate Clarifiers:** As an alternative to combining on-site storm water with the waste filter backwash, storm water directed to on-site storm drains could be treated in separate sedimentation clarifiers for storm water treatment only. Subsequent to clarification, this water would be discharged via the AES outfall with the desalination plant brine discharge and AES cooling water.

The most viable storm water treatment alternative will be selected during the design phase of the project, in close coordination with the City of Huntington Beach, RWQCB, and AES Huntington Beach Generating Station staff. The storm water facilities will be designed to comply with all applicable requirements of the City of Huntington Beach and the RWQCB.

In addition, stormwater runoff would not affect adjacent sensitive land uses. Although the project site is situated directly adjacent to a wetland area (southeast of the site), the subject site will be graded so that all on-site stormwater would flow away from the wetland area towards an on-site local stormwater drainage system. The existing containment berms along the western and southern boundaries of the subject site would remain, providing additional containment of any stormwater to the project site. The proposed project would also incorporate applicable Best Management Practices (BMPs) in order to contain stormwater runoff, which may contain urban pollutants such as petroleum by-products, trash/grease, pathogens, and pollutants that may occur in association with proposed desalination project operation. The project would be in compliance with all standards as administered by the State Water Resources Control Board and County of Orange.

Source Water

Oceanographers from the Scripps Institution of Oceanography conducted modeling studies using a computer model that simulates ocean conditions near the AES Huntington Beach Generating Station intake and outfall (refer to Appendix C, *SOURCE WATER ANALYSIS*). The model calculates the degree of mixing of various potential contaminant sources with the Pacific Ocean. The Santa Ana River, Talbert Marsh, OCSD wastewater discharge outfall, and proposed desalination plant discharge were all investigated. Seawater contamination resulting from any of the above sources could potentially impact the quality of product water and, to some degree, the quality of byproduct brine water to be discharged from the AES outfall. The model results show

the amount of dilution of each of these sources of pollutants under different oceanographic conditions.

The modelers from Scripps used their many years of experience working along the Southern California coast to determine the "worst case" conditions that would be modeled. The "worst case" conditions were chosen to determine if any adverse water quality or environmental impacts occurred under extreme ocean and weather conditions that were most likely to show an effect. For example, the effect of the Santa Ana River and Talbert Marsh storm water on water quality at the AES intake was modeled assuming a very large, prolonged storm event and ocean currents flowing from the mouth of the river towards the AES facility. Normally, ocean currents flow in the opposite direction, down the coast (southeast) away from the AES facility.

❖ Impacts on Source Water from the Santa Ana River and Talbert Marsh

The Santa Ana River drains a highly urbanized watershed of 1,700 square miles and flows into the ocean approximately 8,300 feet southeast from the intake to the AES facility. The Talbert Marsh, which receives urban runoff from the City of Huntington Beach and several other communities, discharges to the ocean about 7,000 feet southeast from the AES intake. Under typical conditions, the discharges from the Santa Ana River and Talbert Marsh flow away (southeast) from the AES intake. However, there are times when the currents flow northwest and carry river and marsh water towards the AES facility. Since freshwater is less dense than seawater, the river and marsh discharges normally float on the surface of the sea and are slowly mixed into deeper waters. During storms, winds and waves can mix the river and marsh plumes into deeper water more rapidly.

Storm water discharges from the Santa Ana River and Talbert Marsh would have the greatest potential to impact water quality at the AES intake if an extreme storm event coincided with an El Nino winter, and also if the AES facility was pumping the maximum amount of cooling water that is allowed by its permit. Although it is unlikely that all of these events would coincide, this was considered to be the "worst case" scenario for determining if storm water from the Santa Ana River and Talbert Marsh reaches the AES intake.

The model showed that assuming "worst case" conditions, water drawn into the intake during an extreme storm event would be comprised of 99.999 percent seawater and 0.001 percent water from the Santa Ana River and Talbert Marsh. This means that every gallon of storm water would be diluted with 100,000 gallons of ocean water under these conditions. Assuming more normal storm events and ocean conditions, there would be an even greater amount of dilution of the storm water. Impacts in this regard are not anticipated to be significant.

❖ Impacts on Source Water from Dry Weather Urban Runoff from the Talbert Marsh

The mouth of the Talbert Marsh is closed by sand spits for short periods of time during the dry season. This can trap up to 200 million gallons of urban runoff and seawater in the Marsh and lower channel system. When very high tides rise over the sand spit, the mouth of the Talbert Marsh opens and 80 to 100 million gallons of water can be released into near shore ocean waters in a single tidal flush. Because Talbert Marsh waters are similar to seawater salinity in the dry

season, the discharge does not float on the sea surface and may quickly mix into deeper ocean waters where the AES intake is located.

Tidal flushing of the Talbert Marsh would have the greatest potential to impact water quality at the AES intake during high spring tides combined with summer El Nino conditions when currents are flowing northwest from the Marsh towards the AES intake.

The model showed that under "worst case" conditions, the Marsh water is diluted 10 billion to one and essentially does not reach the AES intake. This is due to the fact that the Marsh water is released into the surf zone and the onshore waves keep the marsh water in the shallow near shore waters, whereas the AES intake is located 2,292 feet offshore in 34 feet of water. Impacts in this regard are not anticipated to be significant.

❖ **Impacts on Source Water from the OCSD Outfall**

The OCSD discharges up to 480 mgd of wastewater that has received primary treatment and some secondary treatment at an outfall that is located approximately five miles offshore at a depth of 195 feet.

The OCSD wastewater discharge would have the greatest potential to impact water quality at the AES intake with summer El Nino conditions when currents are flowing northwest towards the AES facility. In addition, for "worst case" conditions, the model assumed that OCSD was discharging at its maximum allowable rate of 480 mgd and that the temperature conditions in the ocean would allow the wastewater plume to be near the depth of the AES intake.

The model showed that under these extreme conditions, the OCSD discharge would be diluted 10 million to one at the AES intake and would not affect water quality at the intake. Impacts in this regard are anticipated to be less than significant.

❖ **Impacts on Source Water from the AES Outfall**

The AES outfall is located approximately 1,500 feet offshore and 792 feet from the AES intake. The potential for recirculation of the AES discharge into the AES intake was examined. The discharge consists primarily of cooling water, but a small amount of power plant process wastewater and storm water can be mixed with the cooling water. The concentrated seawater from the proposed desalination plant will also be mixed with the power plant cooling water.

Recirculation of the AES power plant discharge would have the greatest potential to impact water quality at the intake during El Nino storm conditions when the maximum amount of storm water is being discharged through the outfall. The "worst case" model conditions assumed that the AES facility was operating with only one generator so that there would be a greater proportion of process water, storm water, and concentrated seawater in the cooling water discharge. Under these "worst case" conditions the dilution of the power plant discharge at the intake is 1000 to 1. This means that only 0.1 percent of the power plant discharge is recirculated to the intake. Impacts in this regard are not anticipated to be significant.

Water Quality Impacts to Marine Biological Resources

Implementation of the proposed desalination project would mix the facility's brine discharge with the AES Huntington Beach Generating Station's cooling water discharge. It should be noted that, in addition to a Coastal Development Permit (CDP) required by the City for the proposed desalination project, a separate CDP will be required by the California Coastal Commission for the changes in AES outfall salinity. In-pipe salinity of the combined brine/cooling water discharge water will depend upon the level of operation of the AES facility. With a 50 MGD desalination plant production and no additional discharges, salinity of the combined discharge with only one of the four AES generating units in operation would be approximately 55.4 parts per thousand, or "ppt" (about 60 percent higher than the local mean of 33.5 ppt for seawater). With all four AES generating units operational, the salinity of the combined discharge would be approximately 37.2 ppt, near the upper range of natural variability of ocean salinities. A 10 percent anomaly is within the natural variability of seawater salinity and would be tolerated by most fish species.

Following ocean discharge, the combined effluent will mix rapidly with oceanic water. The orientation of the outfall structure produces a vertical discharge stream which broaches the sea surface as an observable "boil," and promotes mixing. The denser, high-salinity water will subsequently sink to the bottom, then spread outward from the base of the outfall tower, further mixing with the surrounding water. Distribution of mid-depth seawater salinity in the vicinity of the AES outfall under worst-case scenario conditions is depicted on Exhibit 13, *PROJECTED MID-DEPTH SALINITY OVER THE AES OUTFALL - "WORST CASE" SCENARIO*. The worst-case scenario assumes that the AES facility has only two circulating pumps operating (one generating unit) and that no additional mixing from natural causes such as wind or wave action would occur. This worst-case scenario has less than a one percent chance of occurring. With a maximum discharge salinity of 55.4 ppt and no additional mixing from natural causes such as wind or wave action (worst case scenario), the highest salinity in the core of the discharge jet is predicted to be 55.0 ppt at mid-depth and 50.1 ppt at the surface.[3] The concentration of the discharge salinity at mid-point of column depth is projected to decrease to 40 ppt (20 percent above background salinity) within only 20 feet from the AES discharge outfall tower. Approximately 100 feet away from the outfall tower, the discharge salinity will decrease to 38.5 ppt, which is only 15 percent above the background seawater salinity. Within 1,200 feet from the outfall tower the discharge salinity will be only 10 percent higher than the background seawater salinity. Under the worst case scenario, the highest salinity on the ocean floor will be 48.3 ppt at the base of the outfall tower, decreasing with distance from the tower, as shown on Exhibit 14, *PROJECTED SEAFLOOR SALINITY AT THE AES OUTFALL - "WORST CASE" SCENARIO*. The discharge salinity drops to less than 15 percent (38.5 ppt) above the background salinity 100 feet away from the discharge. The bottom discharge salinity is reduced to 10 percent of the background salinity within 1,000 feet from the discharge outfall tower. A maximum of 15.6 acres of ocean floor (benthic area) and 18.3 acres of the water (pelagic area) around the discharge are expected to be exposed to water with a salinity 10 percent higher than the ambient seawater during the worst case scenario. These effects are acute and not expected to last for an extended period of time. Composited for one

[3] Hydrodynamic Modeling of Source Water Make-Up and Concentrated Seawater Dilution for the Ocean Desalination Project at the AES Huntington Beach Power Station, Part I: Analysis of Issues to Receiving Water. Dr. Scott A. Jenkins Consulting, August 19, 2001 (revised December 20, 2001).

month, the worst case scenario of maximum discharge salinity and no mixing from natural causes (such as wind or wave action) has a less than one percent chance of occurring.

For normal power plant operation (four circulating pumps associated with two AES generating units), typical environmental conditions and RO plant production of 50 mgd (average case scenario), the salinity at mid-depth in the discharge jet is predicted to be about 41.7 ppt, which is 25 percent higher than background salinity, dropping to 38.3 ppt on the sea surface, as shown in Exhibit 15, *PROJECTED MID-DEPTH SALINITY OVER THE AES OUTFALL - "AVERAGE" SCENARIO*. The concentration of the discharge salinity at mid-point of column depth is projected to decrease to 38.5 ppt (15 percent above background salinity) within 20 feet from the AES discharge outfall tower. Within 500 feet from the outfall tower the discharge salinity will be 10 percent higher than the background seawater salinity.

Assuming the average case scenario, the highest salinity on the ocean floor will be 37.6 ppt at the base of the outfall tower, (only 12% above background salinity), decreasing with distance from the tower as shown on Exhibit 16, *PROJECTED SEAFLOOR SALINITY AT THE AES OUTFALL - "AVERAGE" SCENARIO*. The discharge salinity drops to less than 10 % above the background salinity approximately 430 feet away from the AES outfall. During average case conditions a maximum of 6.5 acres of benthic area and 8.3 acres of pelagic area is expected to be exposed to water with a salinity 10 percent higher than ambient seawater. Average case conditions are expected to occur 50% of the time the RO plant is operating. As more generating units are operated, salinity of the combined discharge will continue to decrease and a smaller area of the surrounding environment will be exposed to elevated salinities.

The pelagic area potentially exposed to a 10% increase in salinity as a result of the RO plant discharge is relatively small, even in the worst case model. A 10% anomaly is within the normal variability of seawater salinity and would be tolerated by most fish species. Salinities predicted for the limited area of the discharge jet vicinity during the worst case scenario are potentially fatal to fish species. Mobile species have the ability to avoid areas that they cannot tolerate and, since sharp salinity gradients may act as barriers to the movements of fish, would likely avoid higher salinity areas.[4] Due to the mobility of the fish, commercial fishing will not be impacted. In addition, fish have been observed feeding in the discharge streams of southern California generating stations including the AES Huntington Beach Generating Station discharge. This opportunistic behavior is likely to be reduced or completely discontinued following the addition of the concentrated seawater discharge. However, given that the AES discharge stream is not the sole food source for fish in the region, impacts in this regard would not be significant. No significant impact to local fish populations as a result of the addition of the brine discharge is expected.

Planktonic species have limited mobility and these species tend to occur in great numbers within the subject site vicinity. Marine planktonic organisms have similar salinity tolerances as local fish species (a 10% anomaly can be tolerated by most fish species/planktonic organisms). However, plankton entrained in the discharge stream are likely to be killed, as much by the turbulence and temperature of the discharge (which would occur even without proposed project implementation)

[4] "Salinity: Fishes." Marine Ecology. F. Holliday, 1971.

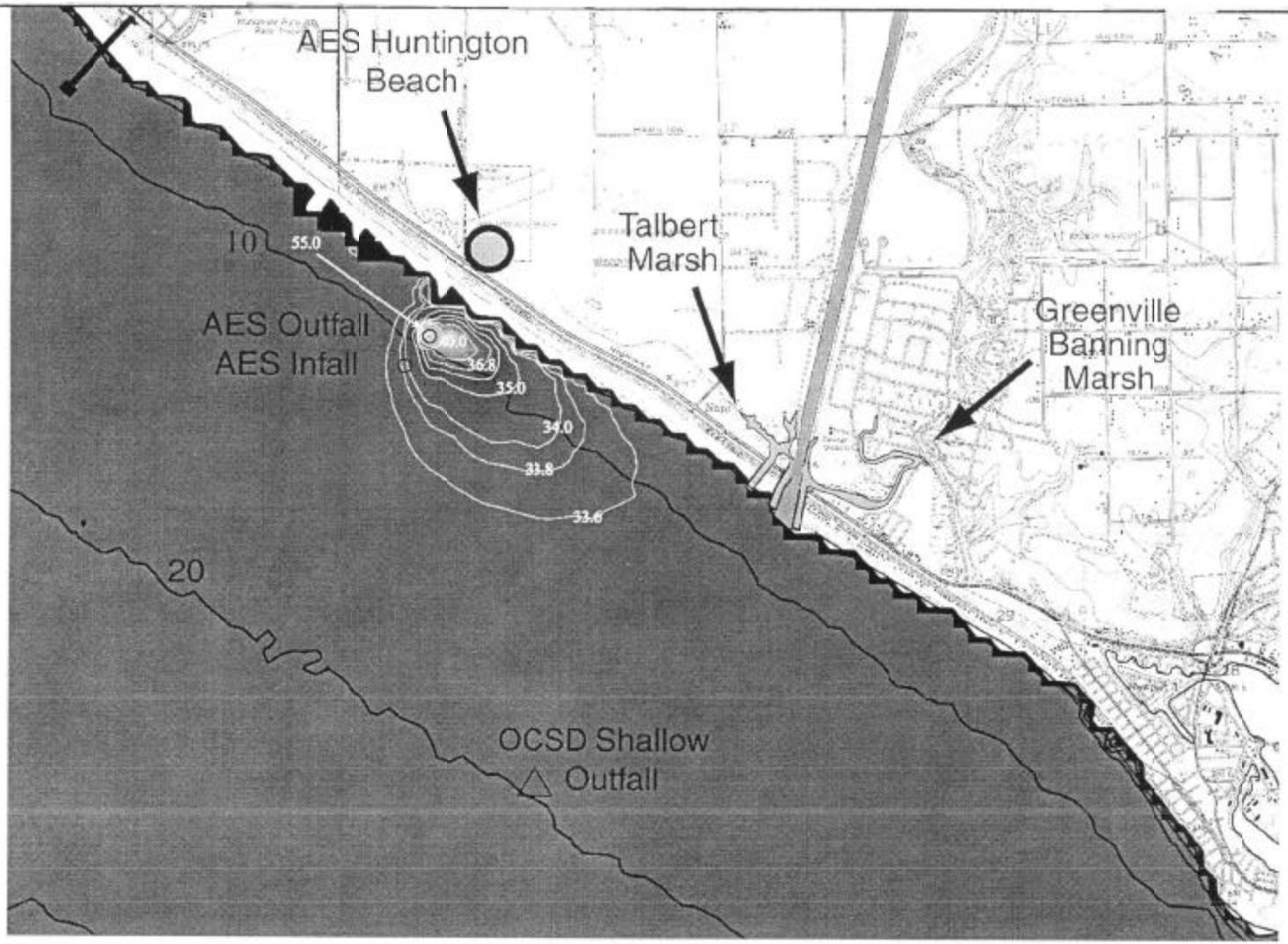

Figure . 30 day average of salinity at mid water column depth for concentrated sea water from: R.O. = 50 mgd, Plant Flow Rate = 126.7 mgd, summer conditions.

Source: Poseidon Resources Corporation, August 2002.

POSEIDON SEAWATER DESALINATION PROJECT

Projected Mid-Depth Salinity Over the AES Outfall - "Worst Case" Scenario

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Exhibit 13

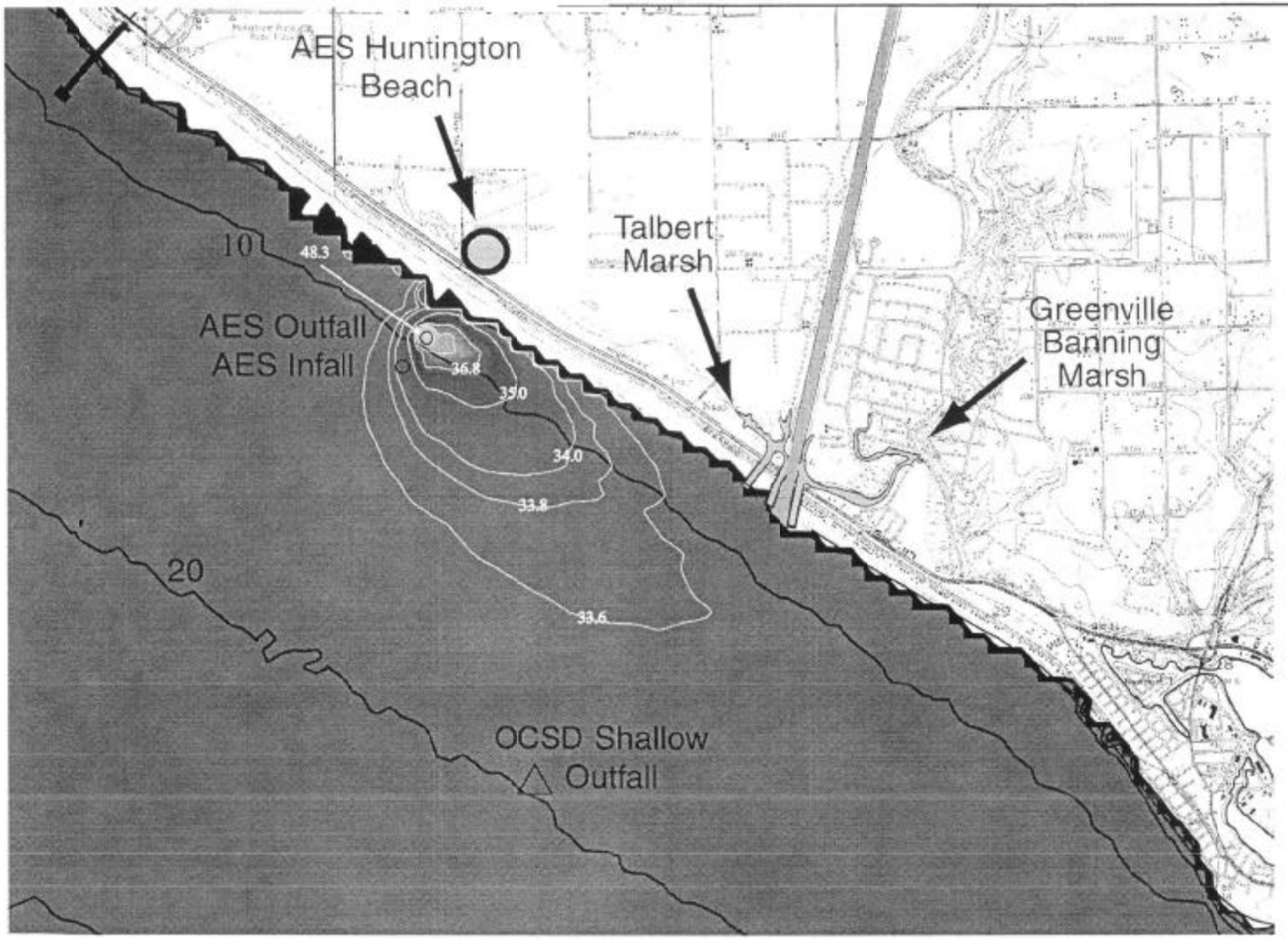

Figure . 30 day average of salinity on sea bottom for concentrated sea water from: R.O. = 50 mgd, Plant Flow Rate = 126.7 mgd, summer conditions.

Source: Poseidon Resources Corporation, August 2002.

POSEIDON SEAWATER DESALINATION PROJECT

Projected Seafloor Salinity At the AES Outfall - "Worst Case" Scenario

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Exhibit 14

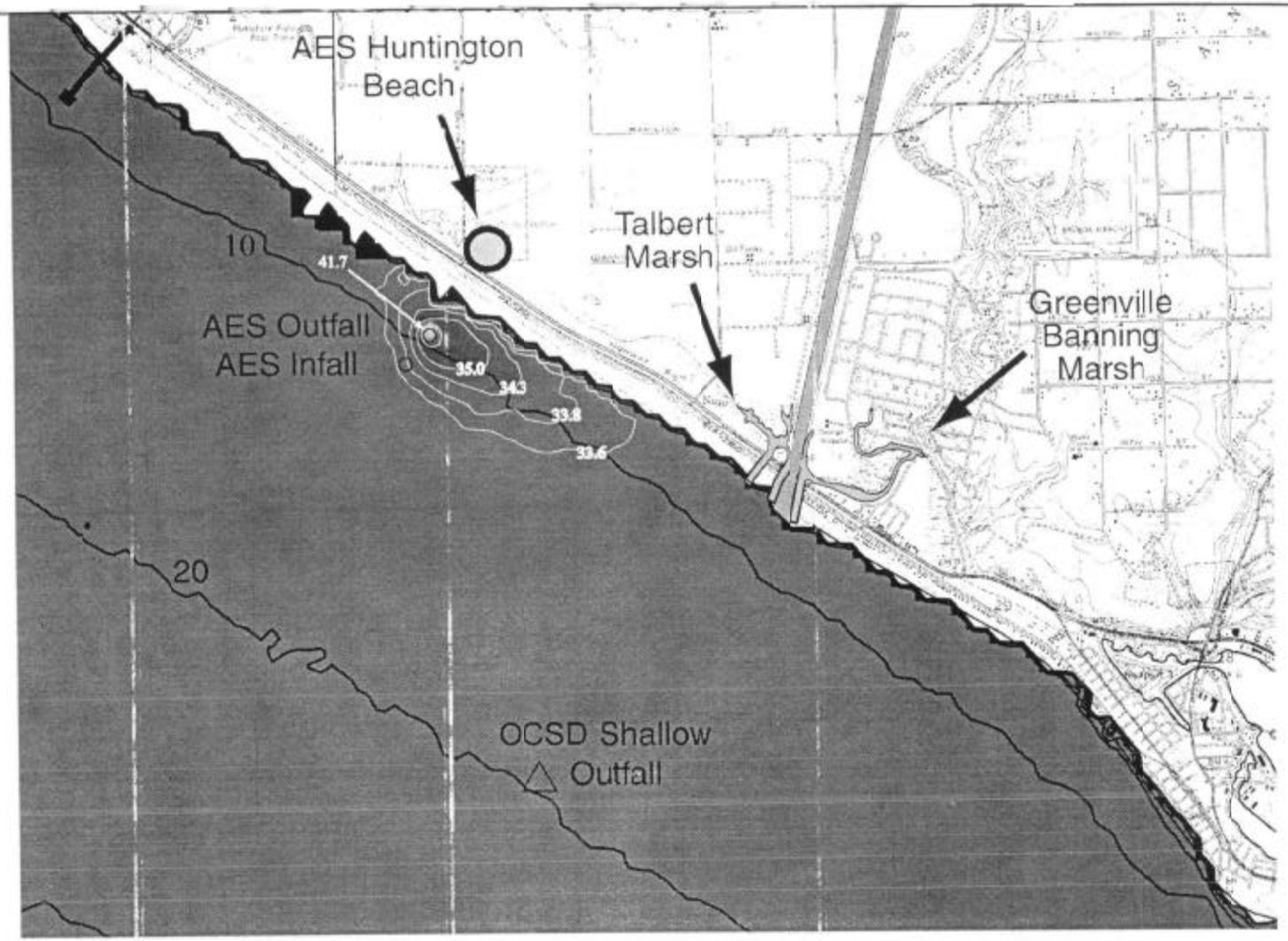

Figure . 30 day average of salinity at mid water column depth for concentrated sea water from: R.O. = 50 mgd, Plant Flow Rate = 253.4 mgd, average conditions.

Source: Poseidon Resources Corporation, August 2002.

POSEIDON SEAWATER DESALINATION PROJECT

Projected Mid-Depth Salinity Over the AES Outfall - "Average" Scenario

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Exhibit 15

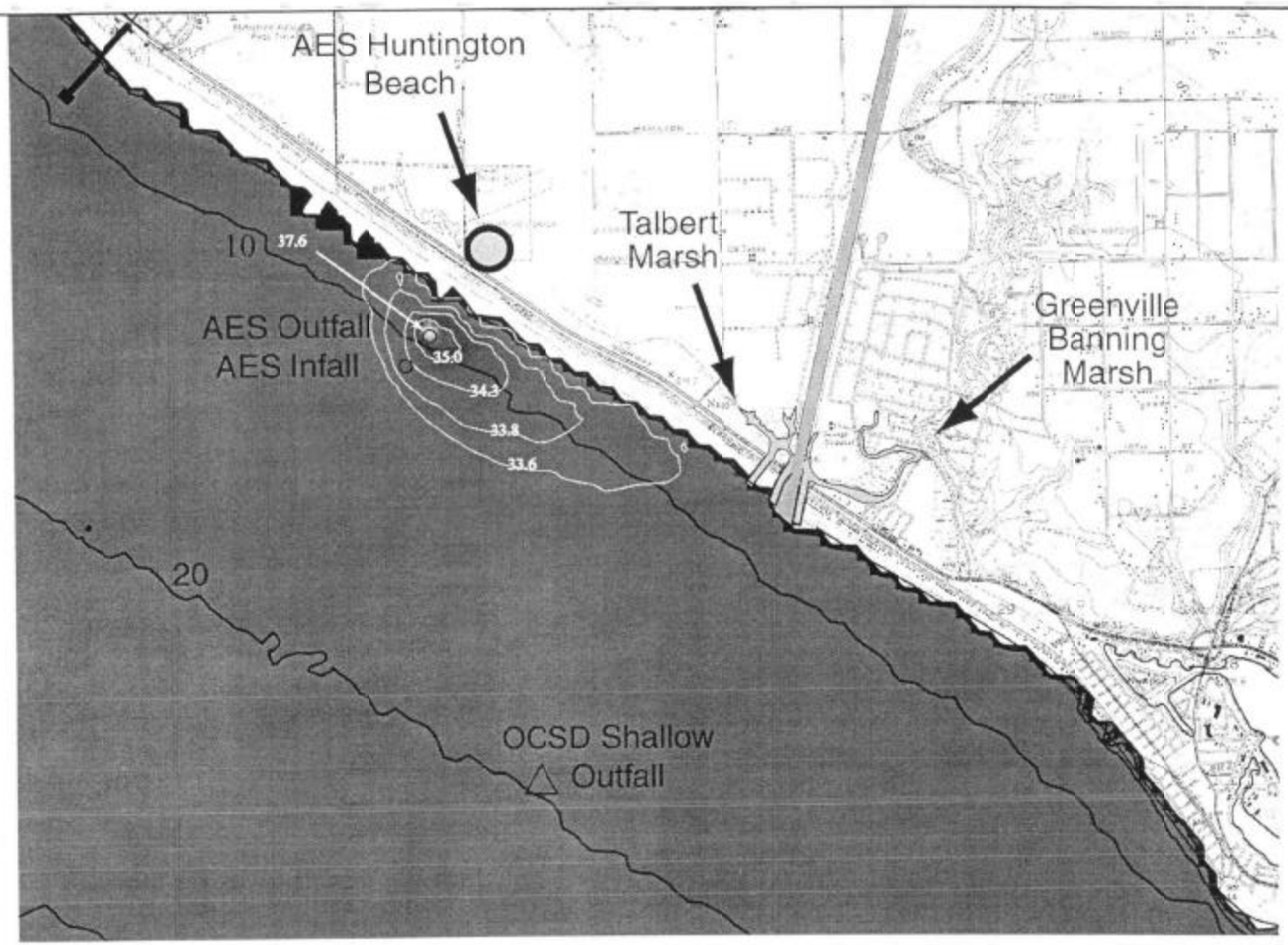

Figure . 30 day average of salinity at seabed for concentrated sea water from: R.O. = 50 mgd, Plant Flow Rate = 253.4 mgd, average conditions.

Source: Poseidon Resources Corporation, August 2002.

POSEIDON SEAWATER DESALINATION PROJECT

Projected Seafloor Salinity At the AES Outfall - "Average" Scenario

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08/02

JN 10-101409

Exhibit 16

as by the salinity increase. No significant increase in plankton loss is expected from the addition of the by-product water to the discharge stream.

The benthic area potentially exposed to a 10% increase in salinity as a result of the RO plant discharge is relatively small in relation to the soft-bottom habitat offshore of Huntington Beach. The benthic community near the discharge structure is dominated by soft-bottom infaunal invertebrate species with limited mobility. Macrofaunal species are the larger members of the benthic community more easily identified in the field and are commonly used to assess the benthic community. Infaunal and other benthic species common offshore of Huntington Beach will have salinity tolerances similar to those of other marine species in the area and should be able to endure salinity increases of up to 10%. For most marine organisms, lower salinities are more detrimental than higher salinities, as long as the upper limit does not exceed 40 ppt.[5] During worst case conditions, however, salinities at the base of the discharge tower are expected to exceed 48 ppt, and even during average conditions the salinity of the water at ocean floor immediately around the discharge will be about 38 ppt, higher than local normal oceanic variation.

In times of stress infaunal species can withdraw into the sediments, where the interstitial water is only gradually exchanged with overlaying water. Still, the benthic species at the base of the intake tower will probably be replaced by species which are more tolerant of high salinities. There is also likely to be a general trend of replacement of infaunal species in the area of the 10% salinity anomaly footprint with species which are common to areas of fluctuating salinity such as bays, estuaries and river mouths. While species common to the open coast can tolerate salinity fluctuations to some degree, in the open coast these fluctuations are gradual, while operations of either the Poseidon RO plant or AES Huntington Beach may cause rapid changes in local salinity which estuarine species are better adapted to tolerate. Local benthic community diversity is likely to be depressed as a result of the RO plant operations. However, these estuarine species will be functionally similar to the existing community. Still, temporal fluctuations in abundance and diversity of benthic species are the norm for the shallow water communities on the mainland shelf of southern California.[6] Replacement species are most likely to be infaunal species common to local estuaries and bays. The area of this replacement will be relatively small and localized. Impacts are not anticipated to be significant in this regard.

In addition, impacts to the local marine environment due to the discharge of RO membrane cleaning solution through the AES outfall are anticipated to be less than significant. As stated previously in Section 3.0, *PROJECT DESCRIPTION*, the reverse osmosis system trains will be cleaned using a combination of cleaning chemicals such as industrial soaps (e.g. sodium dodecylbenzene, which is frequently used in commercially available soaps and toothpaste) and weak solutions of acids and sodium hydroxide. Approximate total discharge volumes per RO membrane cleaning are shown below in Table 4.3-2, *RO MEMBRANE SOLUTION DISCHARGE VOLUMES*. Chemicals typically used for cleaning include (it should be noted that the actual cleaning chemicals used will be based on the observed operation and performance of the system once it is placed in operation):

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5 Benthic Impact of the Discharge from Desalination Plant. C. Pomory, 2000.

6 The Benthic Macrofauna of the Mainland Shelf of Southern California. G.F. Jones, 1969.

- Citric Acid - (2% solution)
- Sodium Hydroxide B - (0.1% solution)
- Sodium Tripolyphosphate B - (2 % solution)
- Sodium Dodecylbenzene B- (0.25% solution)
- Sulfuric Acid B - (0.1% solution)

The "first flush" treated waste cleaning solution from the washwater tank will be discharged into the local sanitary sewer for further treatment at the Orange County Sanitation District (OCSD) regional wastewater treatment facility. The cleaning flush water following the "first flush" will be mixed with the RO plant brine concentrate, treated waste filter backwash, and the AES plant discharge and sent to the ocean. This "second flush" water stream will contain trace amounts of cleaning compounds and would be below detection limits for hazardous waste. Impacts to the local marine environment in this regard would be less than significant.

Table 4.3-2
RO MEMBRANE SOLUTION DISCHARGE VOLUMES

TYPE OF DISCHARGE	GALLONS	PERCENTAGE
Concentrated Waste Cleaning Solution	4,000	4.4
Flush Water - Residual Cleaning Solution	11,000	12.0
Flush Water - Permeate	45,600	50.2
Flush Water - Concentrate Removed During Flushing	30,400	33.4
TOTAL DISCHARGE (gallons)	**91,000**	**100**

An alternative to discharging the "first flush" of the RO membrane cleaning solution into the OCSD system is to discharge the solution ("first flush" and all subsequent flushes) into the Pacific Ocean via the AES outfall. On a typical day, this alternative would blend 200,000 to 300,000 gallons of cleaning solution at a rate of 150 to 200 gpm (0.2 to 0.3 mgd) with 50 mgd of brine by-product discharge, 10-15 mgd of treated filter backwash, and 400 mgd of AES Generating Station cooling water discharge. Under a worst case scenario (high membrane cleaning solution concentration and low concentrations of brine discharge, filter backwash, and AES cooling water discharge), the membrane cleaning solution would be diluted at a ratio of 260 to 1. The majority of the chemicals within the membrane cleaning solution would be either below detection levels or regulatory limits, even before dilution with other desalination plant and AES discharges. Dilution at a 260 to 1 ratio would further minimize impacts to the marine environment and would assure National Pollution Discharge Elimination System (NPDES) compliance. Modeling for this discharge under various concentrations was performed, and is included in Appendix K, *RO MEMBRANE CLEANING SOLUTION DISCHARGE TEST STREAM DATA.*

Water Quality Impacts to Nearby Coastal Wetlands from Off-Site Ocean Discharge

Approximately 2 kilometers southeast of the discharge structure, a protected 7.9-acre California least tern nesting area is located on the Huntington State Beach between the Talbert Marsh

opening and the mouth of the Santa Ana River. The addition of the by-product water will have little if any impact on the least tern colony. This area is well outside the modeled area of elevated salinities.[7] Even if this were not the case, least terns nest above the high tide level, so they would not be directly impacted by water of varying salinities, and their prey species are mobile, surface-schooling fish species which will avoid water that they can not tolerate. California least terns will not be affected as a result of RO plant operations. Similarly, other bird and marine mammal species are unlikely to affected by the addition of the RO plant by-product water to the discharge.

While the mouth of Talbert Marsh is outside of the area of elevated salinities, a wetland/open space area separated from the Talbert Marsh by Brookhurst Street is immediately adjacent to the proposed project site. This wetland/open space area does not have tidal access, although the wetland area is located adjacent to the Huntington Beach Channel. Water sources to this area are limited to rainfall, urban runoff, and groundwater seepage. Salinities are already extremely high in the soils and seasonal ponds, water quality of the brackish water marsh is poor, and the area in general is considered degraded.[8] This privately owned parcel is primarily a seasonally flooded estuarine habitat dominated by pickleweed, along with other plant species that can tolerate high soil salinities and seasonal saturation and drought such as saltgrass and alkali heath. Many areas of the wetland are heavily disturbed and unvegetated. The site functions as a seasonal wetland for some wildlife, while seasonal ponding in former tidal sloughs supports limited fish and invertebrate use.

Water Quality Impacts to Nearby Coastal Wetlands from On-Site Spillage

The existing containment berm along the eastern border of the subject site (to be left in place) would prevent direct spillage of product or by-product water onto the portion of wetlands situated to the east. In the event of an accidental spill associated with proposed project operation of either product or by-product water, no significant effects would occur on the adjacent wetland/open space area or the Huntington Beach Channel because water will not pass the physical separation. Soils of wetlands are already flooded by freshwater during the rainy season, forming standing pools. Product water spills will do the same. Soils are already hypersaline, so spills of by-product water will contribute little to the salinity of soils. Spills into the local Huntington Beach Channel are also likely to have minimal impact. The channel already has multiple year-round fresh water inputs, so product water spills will have no impact. By-product water spills will be diluted by these fresh water inputs. However, if the channel is mostly oceanic at the time of a spill, salinities may be overly elevated. Species likely to be found in the channel, such as topsmelt, can tolerate wide variations in salinity. In addition, the desalination facility would incorporate appropriate leak/spill containment measures to minimize the likelihood for hazardous materials being stored, used, and transported on-site from impacting adjacent uses (refer to Section 4.8, *HAZARDS AND HAZARDOUS MATERIALS*, for a detailed discussion). Impacts in this regard are anticipated to be less than significant.

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7 Hydrodynamic Modeling of Source Water Make-Up and Concentrated Seawater Dilution for the Ocean Desalination Project at the AES Huntington Beach Power Station, Part I: Analysis of Issues to Receiving Water. Dr. Scott A. Jenkins Consulting, August 19, 2001 (revised December 20, 2001).

8 Ecological Descriptions and Evaluation of Proposed Enhancement/Restoration for Eight Southern California Wetlands. MEC Analytical Systems, 1991.

It should be noted that the Huntington Beach Wetlands Conservancy has proposed a Restoration Plan for several wetland areas both adjacent to and downstream of the proposed subject site. As stated above, significant impacts to these wetlands are not anticipated to occur as a result of an accidental spill of product or by-product water from the proposed desalination project.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

Implementation of the proposed aboveground product water storage tank would have slightly greater impacts than the proposed project in regards to hydrology and water quality. The optional aboveground tank would increase the total impervious area of the project site, thereby increasing the amount of storm water runoff. The existing "West" and "North" tank sites are unpaved and are surrounded by 10 to 15-foot high containment berms. As no storm water collection system exists, storm water collects on-site and either percolates into the ground, evaporates, or is pumped off-site. In order to contain storm water on-site, aboveground tank implementation on either optional tank site would include an on-site storm water system which would direct storm water to the desalination facility's storm water system, ultimately discharging into the Pacific Ocean via the AES outfall. In addition, containment berms surrounding the western and northern side of the "West" tank site and the northern and eastern side of the "North" tank site would be left in place, further containing storm water on-site. Implementation of the aboveground product water storage tank option would not alter any anticipated project impacts in regards to source water, marine biological impacts, or impacts to adjacent local wetlands. Flood hazards to either optional site would be similar to the proposed project, as both tank sites also have a Federal Emergency Management Agency (FEMA) flood zone designation of "X". Impacts in regards to hydrology and water quality are expected to be less than significant.

MITIGATION MEASURES

LONG-TERM WATER QUALITY IMPACTS

HWQ-1 Prior to issuance of precise grading or building permits, which ever comes first, the applicant shall submit and obtain approval from the City of Huntington Beach of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine, structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of the BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities to the applicant, and shall reference the location(s) of structural BMPs. The applicable BMPs include:

- Plant materials that require fertilization and pest control shall be maintained in accordance with Orange County Management Guidelines for Use of Fertilizers and Pesticides.
- BMP structures and facilities shall be cleaned and maintained on a scheduled basis by a Facility Operator appointed person.

HWQ-2 Appropriate site specific hydrology and hydraulic analysis will be performed for the project prior to the issuance of grading or building permits, which ever comes first. The analysis shall include mitigation measures, if necessary, in regards to storm water drainage and flooding.

HWQ-3 Prior to the issuance of grading or building permits, which ever comes first, an appropriate on-site drainage system shall be installed for the project that integrates permanent stormwater quality features.

HWQ-4 Product water quality will be permitted by the California Department of Health Services to ensure safe, reliable water quality to the consumer.

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.4 AIR QUALITY

Information in this section is based primarily upon the CEQA Air Quality Handbook, South Coast Air Quality Management District (SCAQMD), April 1993 (as revised through November 1993), Air Quality Data (SCAQMD, 1996 through 2000), the City of Huntington Beach General Plan (1996) and General Plan Environmental Impact Report (1995) and the Final 1997 AQMP (SCAQMD, January 1997). Additional reference material was obtained from the California Air Resources Board and the SCAQMD's on-line Air Quality Handbook. This section focuses on potential short-term air quality impacts associated with construction activity, in addition to long-term local and regional air quality impacts associated with the proposed desalination project. Mitigation measures are also recommended to reduce the significance of impacts.

EXISTING CONDITIONS

SOUTH COAST AIR BASIN

Climate

The proposed project site is located in the South Coast Air Basin (SoCAB), characterized as having a Southern California "Mediterranean" climate (a semi-arid environment with mild winters, warm summers and moderate rainfall). The SoCAB is a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. SoCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The distinctive climate of the SoCAB is determined by its terrain and geographical location, as the SoCAB is a coastal plain with connecting broad valleys and low hills. The general region lies in the semi-permanent high pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The climate is characterized by moderate temperatures and comfortable humidities with precipitation limited to a few storms during the winter season (November through April). The average annual temperature varies little throughout the SoCAB, averaging 62 degrees Fahrenheit.[1] All portions of the SoCAB have had recorded temperatures over 100 degrees in recent years. January is usually the coldest month at all locations while July and August are usually the hottest months of the year. The annual mean temperature in the Orange County area (which includes Huntington Beach) is 66 degrees Fahrenheit, with small daily and seasonal variations. On rare occasions, temperatures may exceed 100 degrees Fahrenheit or fall below freezing.

[1] *CEQA Air Quality Handbook*, South Coast Air Quality Management District, revised November, 1993, page A8-1.

❖ *Rainfall*

Although the SoCAB has a semi-arid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SoCAB by off-shore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the SoCAB. Precipitation is typically 9 to 14 inches annually in the SoCAB and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the SoCAB.

❖ *Winds*

With very low average wind speeds, the SoCAB's atmosphere has a limited capability to disperse air contaminants horizontally. Inland areas record slightly lower wind speeds than coastal areas. Summer wind speed averages slightly higher than winter wind speeds. The dominant daily wind pattern in the SoCAB is a daily sea breeze and a nighttime land breeze. This regime is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the SoCAB.

❖ *Temperature Inversions and Smog*

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air would be mixed and dispersed into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in SoCAB. The cool, damp and hazy sea air capped by coastal clouds is heavier than the warm, clear air which acts as a lid through which the marine layer cannot rise. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from escaping and it backs up along the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the daylight hours. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone observed during summer months in the SoCAB. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The SoCAB has a limited ability to disperse these pollutants due to typically low wind speeds. However, pollutant conditions in coastal areas such as the site vicinity are generally much better than inland areas.

AMBIENT AIR QUALITY STANDARDS

Air quality at any location is dependent on the regional air quality and local pollutant sources. Regional air quality is primarily a function of Air Basin topography and wind patterns.

Ambient air quality is described in terms of compliance with Federal and State standards. Ambient air quality standards are the levels of air pollutant concentration considered safe to protect the public health and welfare. They are designed to protect people most sensitive to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. National Ambient Air Quality Standards (NAAQS) were established by the U.S. Environmental Protection Agency (EPA) in 1971 for six air pollutants. States have the option of adding other pollutants, to require more stringent compliance, or to include different exposure periods. California Ambient Air Quality Standards (CAAQS) for these same six pollutants and NAAQS are included in Table 4.4-1, *LOCAL AIR QUALITY LEVELS*.

The California Air Resources Board (CARB) is required to designate areas of the State as attainment, non-attainment, or unclassified for any State standard. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "non-attainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data do not support either an attainment or non-attainment status.

The EPA designates areas for O_3, CO, and NO_x as either "Does not meet the primary standards," "Cannot be classified," or "Better than national standards." For sulfur dioxide (SO_2), areas are designated as "Does not meet the primary standards," "Does not meet the secondary standards," "Cannot be classified," or "Better than national standards." All other areas are designated "Unclassified." The attainment status designations for each of the six criteria pollutants are described below within the "Ambient Air Quality" discussion.

AMBIENT AIR QUALITY

The South Coast Air Quality Management District (SCAQMD) operates several air quality monitoring stations within the Air Basin. The Costa Mesa Monitoring Station, located along Mesa Verde Drive, is the nearest air monitoring station to the project area. The data collected at this Station is considered to be representative of the air quality experienced in the project vicinity. Air quality data from 1996 to 2000 for the Costa Mesa Monitoring Station is provided in Table 4.4-1, *LOCAL AIR QUALITY LEVELS*. As PM_{10} levels were not monitored at this Station, measurements from the second nearest monitoring station (Anaheim) are also listed in Table 4.4-1. The following air quality information briefly describes the various types of pollutants.

Ozone

O_3 is a colorless toxic gas that can irritate the lungs and damage materials and vegetation. Levels of O_3 exceed Federal and State standards throughout the Air Basin. Because O_3 formation is the result of photochemical reactions between NO_x and reactive organic compounds (ROC), typically produced by combustion sources, peak concentrations of O_3 occur downwind of precursor emission sources. The entire Air Basin is designated as a non-attainment area for State and Federal O_3 standards. As indicated in Table 4.4-1, some exceedances of State standards for O_3 occurred at local air monitoring stations from 1997 through 2001. The State O_3 standard was exceeded between 1 and 5 times over this period. The Federal O_3 standard was not exceeded during the last five years.

Carbon Monoxide

CO is an odorless, colorless toxic gas, produced almost entirely from combustion sources (automobiles). This pollutant interferes with the transfer of oxygen to the brain and it is generally associated with areas of high traffic density. The Orange County portion of the SoCAB is designated as an attainment area for State CO standards while the entire SoCAB is designated a non-attainment area for Federal CO standards. The 8-hour and 1-hour standard have not been exceeded at the Costa Mesa station in the last five years.

Nitrogen Oxides

Nitrogen oxides (NO_x), the term used to describe the sum of nitrogen oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen, are produced by high-temperature combustion processes (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).[2] NO_2, a term often used interchangeably with NO_x, is a reddish-brown gas that can cause breathing difficulties at high levels. The entire Air Basin is designated as a non-attainment area for State and Federal NO_2 standards. The NO_x standard was not exceeded at the Costa Mesa station over the last five years.

On July 1, 1987, the EPA replaced the total suspended particulate (TSP) standard with a new particulate standard known as PM_{10}. PM_{10} includes particulate matter 10 microns or less in diameter (a micron is one millionth of a meter). Sources of PM_{10} include agricultural operations, industrial processes, combustion of fossil fuels, construction and demolition, and windblown dust and wildfires. The entire Air Basin is designated as a non-attainment area for State and Federal PM_{10} standards. Particulates substantially reduce visibility and adversely affect the respiratory tract. As indicated in Table 4.4-1, some exceedances of State standards for PM_{10} occurred at local air monitoring stations from 1997 through 2001, ranging from six to 15 times in a given year (state standards for $PM_{2.5}$ [particulate matter 2.5 microns or less in diameter] did not exist during the monitoring period of 1997 through 2001 as shown in Table 4.4-1, *LOCAL AIR QUALITY LEVELS*).

[2] Environmental Protection Agency Website, www.epa.gov/oar/aqtrnd97/brochure/no2.html.

Table 4.4-1
LOCAL AIR QUALITY LEVELS
(As measured at the Costa Mesa and Anaheim Ambient Air Monitoring Stations)

Pollutant	California Standard	Federal Primary Standard	Year	Maximum[1] Concentration	Days (Samples) State/Federal Std. Exceeded
Carbon Monoxide (Costa Mesa Station)	20 ppm for 1 hour	35 ppm for 1 hour	1997	7.3	0/0
			1998	9.0	0/0
			1999	7.8	0/0
			2000	7.8	0/0
			2001	6.2	0/0
	9 ppm for 8 hours	9 ppm for 8 hours	1997	5.9	0/0
			1998	7.1	0/0
			1999	6.4	0/0
			2000	6.3	0/0
			2001	4.7	0/0
Ozone (Costa Mesa Station)	0.09 ppm for 1 hour	0.12 ppm for 1 hour	1997	0.1	0/0
			1998	0.1	5/0
			1999	0.1	1/0
			2000	0.1	1/0
			2001	0.1	1/0
Nitrogen Oxides (Costa Mesa Station)	0.25 ppm for 1 hour	0.053 ppm annual average	1997	0.1	0/0
			1998	0.1	0/0
			1999	0.1	0/0
			2000	0.1	0/0
			2001	0.1	0/0
Sulfur Dioxide (Costa Mesa Station)	0.25 ppm for 1 hour	0.14 ppm for 24 hours or 80 $\mu g/m^3$ (0.03 ppm) annual average	1997	0.0	0/0
			1998	0.0	0/0
			1999	0.0	0/0
			2000	0.0	0/0
			2001	0.0	0/0
PM_{10} (Anaheim Station)	50 $\mu g/m^3$ for 24 hours	150 $\mu g/m^3$ for 24 hours	1997	91.0	11/0
			1998	81.0	12/0
			1999	122.0	15/0
			2000	126.0	3/0
			2001	93.0	8/0
$PM_{2.5}$ (Anaheim Station)	N/A	65 $\mu g/m^3$ for 24 hours	1997	No Data	N/A
			1998	No Data	N/A
			1999	68.6	N/A/2
			2000	113.9	N/A/6
			2001	55.0	N/A/0

ppm = parts per million $\mu g/m^3$ = micrograms per cubic meter

NOTES
1. Maximum concentration is measured over the same period as the California Standard.
2. PM_{10} exceedances are derived from the number of samples exceeded, not days.
3. PM_{10} exceedances are based on state thresholds established prior to amendments adopted on June 20, 2002.

Source: Data obtained from the California Air Resources Board ADAM Data Summaries Website, www.arb.ca.gov/adam/welcome.html.

Fine Particulate Matter

It should be noted that on June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. The ambient annual PM_{10} standard was lowered from 30 micrograms per cubic meter ($\mu g/m^3$) to 20 $\mu g/m^3$. As no ambient annual state standard existed for $PM_{2.5}$, a new annual standard was established at 12 $\mu g/m^3$. 24-hour average standards for both PM_{10} and $PM_{2.5}$ were retained. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State PM_{10} standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.[3] Particulate matter impacts primarily effect infants, children, the elderly, and those with pre-existing cardiopulmonary disease.

Sulfur Dioxide and Lead

Sulfur dioxide (SO_2), often used interchangeably with sulfur oxides (SO_x), and lead (Pb) levels in all areas of the Air Basin do not exceed Federal or State standards. The SoCAB is designated as attainment for both State and Federal SO_2 standards. There is no NAAQS for lead. The Costa Mesa Station did not exceed State standards for SO_x during the last five years.

REGULATORY FRAMEWORK

Federal Clean Air Act of 1970 and 1990 Clean Air Act Amendments

The Federal Clean Air Act of 1970 (CAA) was the first legislation that gave the U.S. Environmental Protection Agency (EPA) authority to set federal primary and secondary ambient air quality standards. Primary or health-based standards are set at levels necessary to protect the public health. Secondary standards are set to protect the public from air pollution effects such as crop damage, visibility reduction, soiling, nuisances, etc. The resultant national ambient air quality standards (NAAQS) included six pollutants: CO (carbon monoxide), O_3 (ozone), PM_{10} (fine particulate matter), NO_2 (nitrogen dioxide), SO_2 (sulfur dioxide), and Pb (lead). The Act required states that exceeded the NAAQS to prepare air quality plans showing how they would meet the standards by December 1987. The Act was amended in 1977 and again in 1990 to extend the deadline for compliance and to require that revised State Implementation Programs (SIPs) be prepared. The 1990 Clean Air Act Amendments established categories of air pollution severity for non-attainment areas ("marginal" to "extreme"). SIP requirements varied based on the degree of severity.

The 1988 California Clean Air Act (CCAA)

This legislation was signed into law on September 30, 1988, became effective on January 1, 1989, and was amended in 1992. Also known as the "Sher Bill" (Assembly Bill 2595), the CCAA

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[3] Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates. California Environmental Protection Agency, Air Resources Board, May 3, 2002.

observes the requirements of the Federal Clean Air Act and adds three other pollutants to be regulated, including: H_2S (hydrogen sulfide), SO (sulfates), and vinyl chloride. The CCAA established a legal mandate to achieve health-based State air quality standards at the earliest practicable date. The Act specified that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources. Additionally, it also gives air districts such as the SCAQMD new authority to regulate indirect sources.

Each district plan is to achieve a five-percent annual reduction (averaged over consecutive three-year periods) in district-wide emissions of each non-attainment pollutant or its precursors including the effect of any additional development within the region. A strict interpretation of the CCAA "no net" increase prohibition suggests that any general development within the region, no matter how large or small, may have a significant, project-specific air quality impact unless the development-related emissions are offset by concurrent emissions reductions elsewhere within the airshed. Any planning effort for air quality attainment would thus need to consider both State and Federal planning requirements.

1997 Air Quality Management Plan

The SCAQMD has prepared multiple Air Quality Management Plans (AQMPs) to accomplish the five percent annual reduction goal. The most recent AQMP was published in 1997. To accomplish its task, the AQMP relies on a multi-level partnership of governmental agencies at the federal, state, regional and local level. These agencies (EPA, CARB, local governments, Southern California Association of Governments (SCAG), and the SCAQMD) are the cornerstones that implement the AQMP programs.

1997 AQMP. A 1997 AQMP was prepared by the SCAQMD and adopted by the District on November 15, 1996. The 1997 AQMP was then adopted by CARB on January 23, 1997. The 1997 Plan contains two tiers of control measures. Short and intermediate term measures are scheduled to be adopted between 1997 and the year 2005. These measures rely on known technologies and other actions to be taken by several agencies that currently have the statutory authority to implement the measures. They are designed to satisfy the Federal CAA requirement of Reasonably Available Control Technology (RACT) and the CCAA requirement of Best Available Retrofit Control Technology (BARCT). There are 37 stationary source and 24 mobile source control measures in this group.

The 1997 AQMP continues to include most of the control measures outlined in the previous 1994 Ozone Plan with minor exceptions, but postpones many marginal measures found to be less cost-effective, drops future indirect-source rules that are now deemed infeasible, and focuses the SCAQMD's efforts on about ten major emission-reduction rules over the next two years. The SCAQMD will focus its efforts on seven major rules to reduce reactive organic compounds (ROC), a key ingredient in smog; and the Plan includes new market-based measures giving businesses greater flexibility in meeting emission-reduction requirements, such as intercredit trading and additional credits for mobile source emission reductions.

The 1997 AQMP shows that measures outlined in the 1994 Ozone Plan are more than sufficient to attain the Federal health standards for the two most difficult ingredients in smog, PM_{10} and ground-level O_3, by the years 2006 and 2010, respectively. Although the AQMP states that the federal CO standard will be met by 2000, the SoCAB is still designated as a federal non-attainment

area (Orange County, however, is considered an attainment area for state CO standards). The region already has met the three other Federal health standards for Pb, SO_2, and NO_2.

To help reduce PM_{10} pollution, the 1997 Plan outlines seven control measures for directly emitted particulates which will reduce emissions from agricultural areas, livestock wastes, wood-working operations, construction, and restaurants. The measures will also help control dust from paved and unpaved roads, which accounts for two-thirds of the directly-emitted particulates.

The 1997 Plan shows that both emissions and ambient pollution levels have continued their downward path toward healthful levels. The number of Stage I smog episodes for O_3 declined from 41 days in 1990 to just 14 days in 1995. CO also has declined, with the number of days over the standard down from 42 in 1990 to 13 in 1995. The average number of days exceeding the Federal 24-hour PM10 standard also declined between 1990 and 1995 by 9 percent.[4]

1997 AQMP Control Strategies. The 1997 AQMP includes two tiers of emission reduction measures (short/intermediate and long-term measures), based on availability and readiness of technology. Short- and intermediate-term measures include the application of available technologies and management practices between 1994 and the year 2005. These short- and intermediate-term measures are designed to satisfy the Federal CAA requirement of RACT, and the CCAA requirements of BARCT.

To ultimately achieve ambient air quality standards, further development and refinement of known low- and zero-emission control technologies, in addition to technological breakthroughs, would be necessary. Long-term measures rely on the advancement of technologies and control methods that can reasonably be expected to occur between 1994 and 2010.

Because of the EPA's principal authority over many off-road sources, the 1997 AQMP's off-road mobile source control measures are based on the EPA's proposed Federal Implementation Plan (FIP) for the SoCAB. The FIP's proposed control measures are based on a combination of stringent emission standards, declining caps on emission levels and emission/user fees.

In December, 1999 the SCAQMD amended the 1997 AQMP. The 1999 Amendment provides revisions to the ozone portion of the 1997 AQMP specifically in the area of short-term stationary source control measures. In addition, the Amendment revises the adoption and implementation schedule for the short-term stationary source control measures that AQMD is responsible to implement. The 1999 Amendment does not revise the PM_{10} portion of the 1997 AQMP, emission inventories, the mobile source portions of the 1997 Ozone SIP Revision, or the ozone attainment demonstration. Specifically, the 1999 Amendment:

- Includes new short-term stationary source control measures;
- Revises the adoption/implementation schedule for 13 short-term volatile organic compounds (VOCs), nitrogen oxides (NO_x), and stationary source control measures from the 1997 Ozone SIP Revision;
- Provides further VOC emission reductions in the near-term; and

[4] Article entitled "AQMD Sees Progress in Attaining Federal Clean Air Standards, " *AQMD Advisor*, Volume 3, Number 7, September 1996.

- Revises the emission reduction commitments for the long-term control measures in the 1997 Ozone SIP Revision for long-term stationary source control measures that the SCAQMD is responsible to implement.

SENSITIVE RECEPTORS

Sensitive populations (sensitive receptors) are more susceptible to the effects of air pollution than the general population. Sensitive populations who are in proximity to localized sources of toxins and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Existing sensitive receptors are not located within the project site; however, residential, recreational, hospital, (Fairview State Hospital in the City of Costa Mesa), and educational uses exist within the vicinity of the project site, and adjacent to the proposed pipeline routes and underground pump station. It should be noted that an animal shelter and the Wildlife Care Center of Orange County are situated near the project site (along the northern side of Edison Avenue and the northern side of Pacific Coast Highway, respectively), but are not considered sensitive receptors.[5]

TOXIC AIR CONTAMINANTS (TACS)

TACs, often termed "non-criteria", do not have established ambient air standards. SCAQMD implements TAC controls through Federal, State and local programs. Federally, TACs are regulated by EPA under Title III of the Federal CAA. At the State level, the ARB has designated all 189 federal hazardous air pollutants as TACs, under the authority of AB 1807. The Air Toxins Hot Spots Information and Assessment Act (AB 2588) requires inventories and public notices for facilities that emit TACs. SB 1731 amended AB 2588 to require facilities with "significant risks" to prepare a risk reduction plan (reflected in SCAQMD Rule 1402). SCAQMD also regulates source-specific TACs.

IMPACTS

Significance Criteria

Significance thresholds in this section are based on the CEQA Guidelines (Environmental Checklist Form) and the South Coast Air Quality Management District (SCAQMD) *CEQA Air Quality Handbook* as indicated below.

A potentially significant impact to air quality would occur if the project caused one or more of the following:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

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[5] Mike Krause, South Coast Air Quality Management District, May 8, 2002.

- ❖ Expose sensitive receptors to substantial pollutant concentrations; and/or
- ❖ Create objectionable odors affecting a substantial number of people.

The SCAQMD *CEQA Air Quality Handbook* provides significance thresholds for both construction and operation of projects within the SCAQMD jurisdictional boundaries. Projects in the SoCAB with daily or quarterly thresholds which exceed any of the above emission thresholds should be considered significant.

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and Federal CO standards. If the project causes an exceedance of either the state one-hour or eight-hour CO concentrations, the project would be considered to have a significant local impact. If ambient levels already exceed a state or federal standard, then project emissions would be considered significant if they increase one-hour CO concentrations by 1.0 ppm or more, or eight-hour CO concentrations by 0.45 ppm or more.

For a discussion of short-term air quality impacts associated with remediation, demolition, and construction, refer to Section 4.9, *CONSTRUCTION RELATED IMPACTS*.

LONG-TERM EMISSIONS

Long-term air emissions consist of mobile source emissions generated through truck trips and employee vehicle trips associated with desalination plant operation, and stationary source emissions generated directly from activities on the subject site and indirectly from electricity and natural gas consumption.

Stationary sources of long-term air emissions include machinery, equipment and vehicles within the project site, as well as indirect emissions from electricity and natural gas consumption. All water pumps associated with the proposed project (including the proposed off-site underground booster pump station) will be powered electrically, and would not directly generate air emissions. However, indirect impacts due to electrical consumption factors of the proposed desalination project are analyzed below as part of "Off-Site Energy-Related Emissions".

On-Site Area Source Emissions

Assumptions within this EIR for on-site area source emissions for the proposed seawater desalination project are based on estimated emissions from landscaping maintenance. As shown in Table 4.4-2, *DAILY ON-SITE AREA SOURCE EMISSIONS (MITIGATED)*, air emissions in this regard would be nominal. Impacts in this regard are not anticipated to be significant. Air emissions associated with electrical energy consumption associated with desalination plant operation are analyzed below as part of "Off-Site Energy-Related Emissions".

Table 4.4-2
DAILY ON-SITE AREA SOURCE EMISSIONS (MITIGATED)

Pollutant	Total project Emissions (lbs/day)	SCAQMD Thresholds (lbs/day)	Threshold Exceeded? Yes/No
Carbon Monoxide (CO)	0.5	550	No
Reactive Organic Gases (ROG)	0.1	55	No
Nitrogen Oxides (NOx)	0.0	55	No
Fine Particulate Matter (PM10)	0.0	150	No

* Emissions calculated using the URBEMIS7G Computer Model as recommended by the SCAQMD.

Off-Site Mobile Emissions

Data for off-site mobile emissions is based on truck trips (for delivery of supplies necessary for project operation and the pick-up of municipal solid waste) and employee vehicle trips to and from the subject site. As outlined in Table 4.4-3, *DAILY OFF-SITE MOBILE EMISSIONS (MITIGATED)*, the estimated long-term emissions from mobile sources would not exceed any SCAQMD thresholds. Impacts in this regard are not anticipated to be significant.

Table 4.4-3
DAILY OFF-SITE MOBILE EMISSIONS (MITIGATED)

Pollutant	Mobile Source Emissions (lbs/day)	SCAQMD Thresholds (lbs/day)	Threshold Exceeded? Yes/No
Carbon Monoxide (CO)	54.5	550	No
Reactive Organic Gases (ROG)	8.5	55	No
Nitrogen Oxides (NOx)	11.9	55	No
Fine Particulate Matter (PM10)	4.2	150	No

* Emissions calculated using the URBEMIS76 Computer Model as recommended by the SCAQMD.

Combined On-Site Area Source and Off-Site Mobile Emissions

The combined on-site area source and off-site mobile emissions would result in the following estimated daily pollutant generation upon build-out: 55.0 pounds of carbon monoxide (CO), 11.9 pounds of nitrogen oxides (NO_x), 4.2 pounds of PM_{10} (including stationary source particulates), and 8.6 pounds of reactive organic gases (ROG) (refer to Table 4.4-4, *COMBINED DAILY ON-SITE AND OFF-SITE MOBILE EMISSIONS (MITIGATED)*). The proposed project is not anticipated to violate any SCAQMD thresholds for CO, ROG, NO_x, and PM_{10}. Impacts in this regard are not anticipated to be significant.

Table 4.4-4
COMBINED DAILY ON-SITE AREA SOURCE AND OFF-SITE MOBILE EMISSIONS (MITIGATED)

Pollutant	Total project Emissions (lbs/day)	SCAQMD Thresholds (lbs/day)	Threshold Exceeded? Yes/No
Carbon Monoxide (CO)	55.0	550	No
Reactive Organic Gases (ROG)	8.6	55	No
Nitrogen Oxides (NOx)	11.9	55	No
Fine Particulate Matter (PM10)	4.2	150	No

* Emissions calculated using the URBEMIS76 Computer Model as recommended by the SCAQMD.

Off-Site Energy-Related Emissions

Based upon power consumption of 15 kilowatt hours per thousand gallons (4887 kilowatt hours per acre-foot), the proposed 50 mgd (56,000 AF per year) desalination plant will require approximately 30 to 35 megawatts per hour to produce and distribute potable water. As such, the daily energy consumption of the plant is estimated to be between 720 to 840 megawatt hours per day.

In order to take advantage of lower cost power pricing, the facility may utilize off-peak power to the maximum extent practicable by temporarily halting the production of potable water and only pumping product water from the product water storage tank. No back-up electrical generators will be incorporated into the proposed project site, as back-up power would be drawn from the AES power facility's auxiliary reserve bank. Back-up power for the off-site underground booster pump station will be provided by two 3500 kilowatt generator sets using diesel fuel. Maximum emissions from the back-up offsite generators are limited to 200 hours of operation.

The proposed desalination facility's electrical power source will be controlled by a power marketing company, which, in consultation with the California Independent System Operator (Cal ISO), will obtain power from the AES Huntington Beach Generating Station and/or the California power market at the lowest cost possible. As such, a variety of base-, intermediate- and peak-load power generating facilities may produce power for the desalination facility. Typically, base-loaded power plants (such as California's two nuclear power plants and out-of-state coal-fired power plants) as well as several large hydroelectric power dams are the primary source of off-peak power serving Southern California. Intermediate and peak load plants are typically fossil fuel generating facilities (predominantly natural gas fired).

Electric power generating plants are distributed throughout the SoCAB and beyond, and their emissions contribute to the total regional pollution burden. As the project is proposed to consume between 720 to 840 megawatt hours per day of electricity, the project may create regional impacts in regards to air quality (especially NO_x, which is typically produced by high temperature

combustion processes utilizing fossil fuels, including electricity generating plants).[6] However, it would be speculative to quantify such emissions caused by the proposed project's electricity consumption, as many power sources are located outside of the SoCAB or the state, and the time of use by the desalination plant would dictate whether or not off-peak non-fossil fuel electrical power is being consumed.

The project would not change any General Plan or Zoning designations, and, as such, air impacts in this regard have been previously accounted for within local and regional planning documents. In addition, emissions resulting from the proposed project's electricity consumption would not be concentrated in the project site vicinity, as such emissions would be distributed throughout the region (with a portion possibly occurring outside of California), and have been previously accounted for through previous environmental documentation prepared for SCAQMD's Regional Clean Air Incentives Market (RECLAIM) and New Source Review programs (refer to *CONSISTENCY WITH REGIONAL PLANS*, below).[7]

It should be noted that, although a power plant is located adjacent to the subject site (the AES Huntington Beach Generating Station), actual project-related emissions are not possible to attribute to any one plant, since the project's electrical demand is met by dozens of power plants connected to a regional power supply grid, with many of those plants located outside of Southern California. It should further be noted that if the AES facility were to cease operating, electricity would still be available to the proposed desalination facility, as the proposed project would utilize electricity from the power grid and not directly from AES.

CONSISTENCY WITH REGIONAL PLANS

Although the project would represent a negative impact to air quality in the SoCAB, of primary concern is that project-related impacts have been properly anticipated in the regional air quality planning process and reduced whenever feasible. Therefore, it is necessary to assess the project's consistency with the AQMP.

The subject site has a land use designation of Public (P) and a zoning designation of General Industrial (IG). Project implementation would not conflict with the General Plan or Zoning Ordinance, nor would it propose to change any designations. As such, projects consistent with local General Plans are considered consistent with air quality related regional plans, such as the AQMP.[8] Accordingly, air quality emissions and related impacts for the proposed desalination project have been planned for both locally and regionally.[9]

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6 In the event that the proposed desalinated water entirely replaces a given water provider's water curtailed from the State Water Project along the West Branch, then the power requirements to move imported water through the Central Valley, over the Tehachapi Mountains, and into the Los Angeles Basin could result in substantial power reductions, thus resulting in air quality offsets. Whereas the proposed facility has an "all in" power rate of 4,887 kilowatt hours per acre-foot for producing water and conveyance into the Orange County system, according to the Department of Water Resources Bulletin 132 (1998), the State Water Project has a power rate of 3,200 kilowatt hours per acre-foot (net of hydroelectric power production in the LA Basin). As such, there is only a 1,687 kilowatt-hour per acre foot difference (or an additional 258 megawatts per day) increase in energy consumption over current supplies into the Metropolitan Water District's (MWD) Diemer water treatment facility.

7 Jonathan Nadler, South Coast Air Quality Management District, February 22, 2002.

8 CEQA Air Quality Handbook, Chapter 12, page 12-2.

9 Jonathan Nadler, South Coast Air Quality Management District, February 22, 2002.

As indicated in SCAQMD's *CEQA Air Quality Handbook*, there are two main indicators of consistency:

- ❖ Whether the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP; and
- ❖ Whether the project would exceed the AQMP's assumptions for 2010 or increments based on the year of project build-out and phase.

The proposed project does not involve a General Plan Amendment, zone change, or other change in land use. Therefore, the project would be consistent with the County of Orange and City of Huntington Beach land use assumptions. As previously stated, since the AQMP is based on the City and County's General Plan assumptions, and since the proposed desalination project is consistent with these General Plan assumptions, the project would be considered consistent with the AQMP land use assumptions and goals. Based on the above, the proposed project is considered consistent with regional plans, therefore it is considered to have no significant air quality regional planning impact.

In addition, the region (Los Angeles County, Orange County, and half of Riverside County) is regulated by the SCAQMD's Regional Clean Air Incentives Market (RECLAIM). The RECLAIM program, implemented on January 1, 1994, controls the amount of NO_x and SO_x emissions through financial incentives and involves the trading of emissions credits. The RECLAIM program is designed to guarantee annual reductions in air pollution by requiring industrial and business uses (including power plants) emitting four tons or more per year of NO_x and SO_x to cut their emissions by a specific amount each year, resulting in an almost 80 percent reduction by 2003 for NO_x and SO_x. As such, future NO_x and SO_x emissions for the region, including those resulting from project implementation, would be offset through the RECLAIM program, and no significant regional air quality planning impact is anticipated.[10]

The proposed project will also require review by the SCAQMD under Regulation XIII (New Source Review), which establishes pre-construction requirements for new or modified facilities to ensure that operation of such facilities does not interfere with progress toward the attainment of ambient air quality standards (AAQS) without necessarily restricting economic growth. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of non-attainment air contaminants or their precursors.[11] This standard review process administered by the SCAQMD will further ensure that the proposed project is consistent with regional air quality plans.

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10 http://www.aqmd.gov/reclaim/reclaim.html

11 http://www.aqmd.gov/rules/html/r1301.html

SENSITIVE RECEPTORS

Existing sensitive receptors are not located on the subject site; however, residential, hospital (Fairview State Hospital in the City of Costa Mesa), recreational, open space, and educational uses exist within the vicinity of the site and adjacent to the pipeline routes and underground pump station. Although the proposed project may exceed SCAQMD thresholds for long-term operational NO_x emissions, the proposed desalination project will be consistent with the City of Huntington Beach General Plan, Zoning Ordinance, and policies set forth by the SCAQMD and SCAG. Impacts in this regard are not anticipated to be significant.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

The implementation of an aboveground product water tank instead of an underground product water tank would not alter anticipated long-term air quality impacts of the proposed desalination project. Construction-related emissions would be substantially reduced with this option, as it would avoid the excavation and off-site export necessary for the below-ground tank. The storage of potable product water would not be a source of long-term air emissions under either option (aboveground or underground), as it would not impact mobile source emissions, on-site area source emissions, off-site mobile emissions, or off-site energy-related emissions. In addition, implementation of the aboveground tank option would not alter the project's consistency with regional air quality management plans or result in increased impacts to nearby sensitive receptors. Impacts due to implementation of this option are not expected to be significant.

MITIGATION MEASURES

LONG-TERM EMISSIONS

None required.

CONSISTENCY WITH REGIONAL PLANS

None required.

SENSITIVE RECEPTORS

None required (refer to Section 4.9, *CONSTRUCTION RELATED IMPACTS*, for a discussion of short-term construction related air quality impacts).

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.5 NOISE

This section addresses potential noise impacts from project construction, traffic and operations. This section is based on the City of Huntington Beach General Plan (1996), the City of Huntington Beach General Plan EIR (1995), and the City's "Transportation System Needs Analysis 2000-2010" (September 12, 2000, approved by City Council October 2, 2000).

EXISTING CONDITIONS

NOISE ENVIRONMENT

The primary noise sources in the project vicinity include numerous industrial uses and noise from adjacent local roadways. Both mobile and stationary noise sources contribute to the existing noise levels at the project site. Mobile noise sources consist mainly of car and truck traffic, with high volumes of traffic along Pacific Coast Highway, Magnolia Street, and Beach Boulevard (located west of the subject site). Stationary noise sources within the site vicinity include the AES Huntington Beach Generating Station and commercial/industrial uses located to the north along Edison Avenue and Hamilton Avenue.

NOISE SCALES AND DEFINITIONS

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In general, a 1 dB change in the sound pressure levels of a given sound is detectable only under laboratory conditions. A 3 dB change in sound pressure level is considered a "just detectable" difference in most situations. A 5 dB change is readily noticeable and a 10 dB change is considered a doubling (or halving) of the subjective loudness. It should be noted that, generally speaking, a 3 dBA increase or decrease in the average traffic noise level is realized by a doubling or halving of the traffic volume; or by about a 7 mile per hour (mph) increase or decrease in speed.

For each doubling of distance from a point noise source (a stationary source, such as a loudspeaker or loading dock), the sound level will decrease by 6 dBA. In other words, if a person is 100 feet from a machine, and moves to 200 feet from that source, sound levels will drop approximately 6 dBA. For each doubling of distance from a line source, like a roadway, noise levels are reduced by 3 to 4.5 dBA, depending on the ground cover between the source and the receiver. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; 20 dBA higher four times as loud; and so forth. Everyday sounds normally range

from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are shown in Table 4.5-1, *SOUND LEVELS AND HUMAN RESPONSE.*

There are three methods used to measure sound over a period of time: the Community Noise Equivalent Level (CNEL), the equivalent energy level (Leq) and the Day/Night Average Sound Level (Ldn). The City of Huntington Beach utilizes all three methods. The predominant community noise rating scale used in California for land use compatibility assessment is the Community Noise Equivalent Level (CNEL). The CNEL reading represents the average of 24 hourly readings of equivalent levels, known as Leq's, based on an A-weighted decibel with upward adjustments added to account for increased noise sensitivity in the evening and night periods. These adjustments are +5 dBA for the evening (7 p.m. to 10 p.m.), and +10 dBA for the night (10 p.m. to 7 a.m.). CNEL may be indicated by "dBA CNEL" or just "CNEL".

The Leq is the sound level containing the same total energy over a given sample time period. The Leq can be thought of as the steady (average) sound level which, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period. Leq is typically computed over 1, 8 and 24-hour sample periods.

Another commonly used method is the day/night average level or Ldn. The Ldn is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the Leq. The Ldn is calculated by averaging the Leq's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10 p.m. to 7 a.m.), by a 10 dBA to account for the increased sensitivity of people to noises that occur at night. The maximum noise level recorded during a noise event is typically expressed as Lmax. The sound level exceeded over a specified time frame can be expressed as Ln (i.e., L90, L50, L10, etc.). L50 equals the level exceeded 50 percent of the time.

NOISE SENSITIVE RECEPTORS

Land uses considered sensitive receptors to noise include residential areas, schools, hospitals, churches, recreational areas, office buildings and transient lodging. Residential areas are also considered noise sensitive, particularly during the nighttime hours. The site is located adjacent to primarily commercial/industrial uses. Although no residential uses exist on the proposed project site, the Ascon/Nesi Landifll (located northeast of the site) is designated for residential uses, and two contiguous mobile home parks are situated west of the subject site along the inland side of Pacific Coast Highway. Additional residential uses surround the site to the north and east. Edison Community Center exists north of the project site along the northern side of Hamilton Avenue, while Edison High School is situated northeast of the site at the intersection of Hamilton Avenue and Magnolia Street. An open space area, Huntington State Beach, and Huntington City Beach are situated south and southwest of the subject site along Pacific Coast Highway. The project would also involve the installation of up to 10 miles of pipeline to be installed primarily within existing public streets, easements, or other rights-of-way (ROW), which may create temporary construction

Table 4.5-1
SOUND LEVELS AND HUMAN RESPONSE

NOISE SOURCE	dB(A) Noise Level	RESPONSE
	150	
Carrier Jet Operation	140	Harmfully Loud
	130	Pain Threshold
Jet Takeoff *(200 ft.)* Discotheque	120	
Unmuffled Motorcycle Auto Horn *(3 ft.)* Rock'n Roll Band Riveting Machine	110	Maximum Vocal Effort Physical Discomfort
Loud Power Mower Jet Takeoff *(2000 ft.)* Garbage Truck	100	Very Annoying Hearing Damage (Steady 8-Hour Exposure)
Heavy Truck *(50 ft.)* Pneumatic Drill *(50 ft.)*	90	
Alarm Clock Freight Train *(50 ft.)* Vacuum Cleaner *(10 ft.)*	80	Annoying
Freeway Traffic *(50 ft.)*	70	Telephone Use Difficult
Dishwashers Air Conditioning Unit *(20 ft.)*	60	Intrusive
Light Auto Traffic *(100 ft.)*	50	Quiet
Living Room Bedroom	40	
Library Soft Whisper *(15 ft.)*	30	Very Quiet
Broadcasting Studio	20	Just Audible
	10	Threshold of Hearing

Source: Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment, 1970 (p. 2), and others.

related noise impacts to sensitive receptors located along the proposed pipeline alignment. Refer to Exhibit 4, *CONCEPTUAL PIPELINE ALIGNMENTS*, for preliminary pipeline routings. In addition, an underground booster pump station is proposed to be located within an area of unincorporated Orange County, approximately 1.5 miles south of the University of California, Irvine. The pump will be electrically powered and will be placed underground within an Orange County Resource Preservation Easement, in an area adjacent to open space and residential uses.

EXISTING NOISE LEVELS

Existing ambient noise levels were measured on-site, nearby surrounding sensitive receptors, along the proposed water delivery pipeline alignments, and at the off-site underground pump station. Measurements were taken utilizing a Type I rated sound level meter, with readings lasting 15 minutes each. A total of four readings were taken on-site, five nearby surrounding sensitive receptors, one at the off-site underground pump station, and five along the proposed pipeline alignments. The Leq, Lmax, and source of peak noise for each reading is shown below in Table 4.5-2, *EXISTING ON-SITE AMBIENT NOISE LEVELS*, Table 4.5-3, *EXISTING AMBIENT NOISE LEVELS FOR SURROUNDING SENSITIVE RECEPTORS,* and Table 4.5-4, *EXISTING AMBIENT NOISE LEVELS FOR OFF-SITE PROJECT COMPONENTS.*

In general, ambient noise levels were lowest at the desalination plant site, nearby surrounding sensitive receptors, and off-site underground pump station facility (an average Leq of 58.1 dbA). Ambient noise levels were higher along the two off-site water transmission pipeline alignments, with an average Leq of 71.7, due to automobile traffic along the roadways in which the pipeline alignments are proposed to be located within.

Table 4.5-2
EXISTING ON-SITE AMBIENT NOISE LEVELS

LOCATION OF NOISE READING	Leq db(A)	Lmax db(A)	PEAK NOISE (Source, db(A))
Northwest Portion of Site	54.8	64.5	Airplane - 95.2
Northeast Portion of Site	56.2	70.8	Truck - 98.6
Southwest Portion of Site	60.1	69.4	Helicopter - 94.1
Southeast Portion of Site	57.8	63.7	Airplane - 91.4

* Measurements recorded on 4/24/02.

NOISE STANDARDS

It is difficult to specify noise levels which are generally acceptable to everyone. What is annoying to one person may be unnoticed by another. Standards may be based on documented complaint activity in response to documented noise levels, or based on studies on the ability of people to sleep, talk, or work under various noise conditions. All such studies, however, recognize that

Table 4.5-3
EXISTING AMBIENT NOISE LEVELS NEARBY SURROUNDING SENSITIVE RECEPTORS

LOCATION OF NOISE READING	Leq db(A)	Lmax db(A)	PEAK NOISE (Source, db(A))
Eastern Boundary of Huntington-By-The-Sea/Cabrillo Mobile Home Parks	57.1	70.0	Automobile - 86.7
Hamilton Avenue/Magnolia Street Intersection (Edison Community Center, Edison High School)	61.0	73.5	Automobile - 96.0
Hamilton Avenue/Newland Street Intersection (residential area north of Newland Street)	59.7	71.3	Truck - 92.8
Magnolia Street/Bermuda Drive Intersection (residential area east of Magnolia Street)	69.7	86.8	Bus - 101.4
Northern Boundary of Huntington State Beach	61.0	69.2	Automobile - 82.4

* Measurements recorded on 4/12/02 and 4/24/02.

Table 4.5-4
EXISTING AMBIENT NOISE LEVELS FOR OFF-SITE PROJECT COMPONENTS

LOCATION OF NOISE READING	Leq db(A)	Lmax db(A)	PEAK NOISE (Source, db(A))
Brookhurst Street/Adams Avenue Intersection (Primary Alignment)	73.9	86.6	Automobile Horn - 102.3
Harbor Boulevard/Fair Drive Intersection (Primary Alignment)	73.2	85.1	Bus - 100.1
Hamilton Avenue/Bushard Street Intersection (Alternative Alignment)	71.0	86.3	Truck - 101.2
Victoria Street/Placentia Avenue Intersection (Alternative Alignment)	72.6	84.3	Automobile - 95.0
Del Mar Avenue/Elden Avenue Intersection (terminus of both pipeline alignments)	67.7	78.5	Automobile - 92.4
Off-Site Underground Pump Station (within an Orange County Preservation Easement)	43.9	63.7	Wildlife - 87.8

* Measurements recorded on 4/12/02.

individual responses vary considerably. Standards usually address the needs of most of the general population. With this caution in mind, noise standards for planning purposes examine both outdoor and indoor noise levels acceptable for different uses. The standards relate to existing conditions in the City so that they are realistically enforceable and consistent with the City's General Plan objectives.

The Federal government specifically preempts local control of noise emissions from interstate highways, railroads and aircraft. The State of California has established guidelines for acceptable community noise levels which are based on the CNEL rating scale. The guidelines rank noise land use compatibility in terms of "normally acceptable," "conditionally acceptable," and "clearly unacceptable" noise levels for various land use types. As shown in Table 4.5-5, *LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS*, single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial and professional uses. As indicated in Table 4.5-5, many noise-sensitive land uses such as residential areas, schools, churches, hospitals, etc., use a daily noise level value of 70 dBA as the dividing line between a "conditionally acceptable" and a "normally acceptable" noise environment.

In addition to Federal and State noise standards, the City of Huntington Beach has adopted noise objectives and policies in its General Plan. These noise objectives and policies pertain to land use impacts, mobile noise sources, and stationary noise sources. The City's Municipal Code sets standards for interior and exterior noise levels. In general, the exterior living areas (yards and patios) of residences should not exceed 55 dBA CNEL from 7 a.m. to 10 p.m. The California Noise Insulation Standard (California Administrative Code, Title 25, Chapter 1, Subchapter 1, Article 4) requires that indoor noise levels in multi-family residences do not exceed a CNEL of 45 dBA.

Local agencies may regulate noise levels of most sources not regulated by the Federal government; may provide standards for insulation of noise receivers either within the structure or by placement of noise barriers such as walls; and, through land use decisions, may reduce noise impacts by separating noise generators from noise sensitive uses. To provide a satisfactory noise environment and to minimize complaints about community noise, the City has adopted standards for evaluating the compatibility of land uses with respect to outdoor and certain indoor noise levels.

The purpose of the land use compatibility analysis is to screen projects which may require specific design considerations to mitigate noise impacts. The General Plan's noise exposure contours are used in conjunction with the noise standards indicated on Table 4.5-5, *LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS*, to make such a determination.

IMPACTS

Significance Criteria

A project is considered to have a significant noise impact where it causes an adopted noise standard to be exceeded for the project site or for adjacent affected sensitive receptors. In addition to being concerned about the absolute noise level that might occur when a new source is introduced into an area, it is also important to consider the existing noise environment. If the existing noise environment is quiet and the new noise source greatly increases the noise exposure, even though a criterion level might not be exceeded, some impact may occur. Lacking adopted standards for evaluating such impacts, general rules of thumb for community noise environments

Table 4.5-5
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE Ldn or CNEL dBA			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density	50 - 60	55 - 70	70 - 75	75 - 85
Residential - Multiple Family	50 - 65	60 - 70	70 - 75	75 - 85
Transient Lodging - Motel, Hotels	50 - 65	60 - 70	70 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	65 - 85	NA
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	70 - 85	NA
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	NA	70 - 80	80 - 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA

Source: Office of Noise Control, California Department of Health, as cited in the City of Huntington Beach General Plan EIR, 1995, Figure N-1.

Notes: **NORMALLY ACCEPTABLE**
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. Outdoor environment will seem noisy

NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements needed to mitigate the unacceptable noise levels must be made and needed noise insulation features must be included in the design. Outdoor areas must be shielded.

CLEARLY UNACCEPTABLE
New construction or development clearly should not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be useable.

NA: Not applicable.

are that a change of over 5 dBA is readily noticeable and, therefore is considered a significant impact.[1] Changes from 3 to 5 dBA may be noticed by some individuals and are therefore considered to constitute an adverse environmental impact since under these conditions sporadic complaints may occur. Changes in community noise levels of less than 3 dBA are normally not noticeable and are therefore considered less than significant.[2] Adverse impacts would result if increases in noise levels are audible (increases equal to, or greater than 3 dBA), although the noise level may not exceed the significant impact criteria specified above. It should be noted that, for traffic-related noise impacts on arterial streets (of 20,000 daily trips or more), it requires a traffic increase of approximately 5,000 daily trips to increase the CNEL by one decibel.

The State of California has established guidelines for acceptable community noise levels based on the CNEL rating scale (refer to Table 4.5-5, *LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS*).

According to the City of Huntington Beach Municipal Code (Chapters 8.40.050 and 8.40.070), the maximum permissible sound pressure level measured at the property boundary should not exceed 55 dBA between the hours of 7:00 a.m. and 10:00 p.m., and should not exceed 50 dBA between the hours of 10:00 p.m. and 7:00 a.m. Interior noise levels should not exceed 55 dBA between the hours of 7:00 a.m. and 10:00 p.m., and should not exceed 45 dBA between the hours of 10:00 p.m. and 7:00 a.m.

For a discussion of short-term, construction-related noise impacts, refer to Section 4.9, *CONSTRUCTION-RELATED IMPACTS.*

LONG-TERM STATIONARY SOURCES

The proposed project involves the implementation of a 50 mgd desalination plant on a site currently occupied by an existing fuel oil storage tank facility. The project site exists within an industrial area, with the AES Huntington Beach Generating Station and Edison pipeline and Terminal Company (EPTC) tank farm located in the project vicinity. Noise may be generated from proposed stationary sources associated with facility operations, including various electric water pumps and air conditioning system components. A total of 36 large electric water pumps will be utilized on-site, the largest of which will be utilized indoors. A total of 13 400-horsepower pumps and 13 3,500 horsepower pumps will be operated indoors (reverse osmosis feed pumps), while five 250-horsepower pumps and five 500-horsepower pumps will be operated outdoors (seawater intake pumps, pretreatment filter transfer pumps, and product water transfer pumps). All indoor pumps would be fully enclosed within the proposed reverse osmosis building. In addition, the off-site booster pump station will be placed within an underground vault in order to minimize potential noise impacts to open space and residential uses surrounding the site. In an unmitigated condition, project stationary noise sources may exceed 85dbA at 50 feet, resulting in an estimated noise level of 60 dbA at the nearest sensitive receptors to the north, east (located over 1,000 feet from the pump station site), and west. When accounting for noise attenuation provided by intervening

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1 Assessment of Noise with Respect to Community Response, ISDR 1996, International Standardization, Switzerland.

2 Fundamentals and Abatement of Highway Traffic Noise, Bolt, Beranek and Newman, 1973.

structures and topography as well as proposed on-site structures, noise levels are anticipated to be below City thresholds. In addition, an acoustical analysis report shall be prepared for the proposed project which describes stationary noise generation potential and identifies applicable mitigation measures, if necessary. The increase in noise levels from stationary sources associated with the project is not anticipated to result in a noticeable increase in the ambient noise level and is therefore considered to have a less than significant noise impact.

MOBILE SOURCES

The proposed project would generate a nominal amount of noise resulting from mobile sources as a result of employee trips and truck-generated traffic. As stated previously, the proposed desalination plant would employ a total of approximately 18 people, with an average of five to seven people on-site per shift on weekdays. In addition, facility operation would require approximately three truck trips per day for solid waste disposal and chemical delivery. Noise generated by mobile sources as a result of the proposed desalination plant is so nominal that impacts in this regard are anticipated to be less than significant.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

Long-term noise impacts associated with optional aboveground product water storage tank implementation are anticipated to be similar to those of the proposed project. Operation of an aboveground tank is not expected to be a significant noise generator. Should a pump station be placed adjacent to the optional tank, noise attenuation features similar to those utilized for the proposed desalination facility would be employed to minimize noise levels to less than significant levels (especially for "West" tank site implementation, as the tank would be situated at a closer proximity to residential uses along Newland Street). Impacts in this regard are anticipated to be less than significant.

MITIGATION MEASURES

STATIONARY NOISE SOURCES

NOI-1 Prior to the issuance of any building or grading permits, the Applicant shall prepare an acoustical analysis report and appropriate plans, prepared under the supervision of a City-approved acoustical consultant, describing the stationary noise generation potential and noise mitigation measures (such as the installation of sound enclosures or placing noise-generating equipment indoors), if needed, which shall be included in the plans and specifications of the project. All stationary equipment shall be designed to meet the noise criteria as specified in the City of Huntington Beach Municipal Code Chapter 8.40 (Noise Control), and will be subject to the approval of the City of Huntington Beach.

MOBILE SOURCES

None required.

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.6 PUBLIC SERVICES AND UTILITIES

Public services include services such as fire protection, police protection, schools, libraries and parks. Utilities include wastewater, water, solid waste, electricity, gas, telephone, and cable. The purpose of this section is to establish existing conditions for each provider, identify potentially significant impacts and recommend mitigation measures to reduce the significance of such impacts. The primary question regarding utilities and services, relative to the CEQA process, is whether or not the project has any direct effect on the physical environment through impacts to existing facilities or the requirement to construct new facilities, particularly where such impacts would have an adverse impact on the environment. Information in this section is based on the City of Huntington Beach General Plan, City of Huntington Beach General Plan EIR, and correspondence from public service and utilities agencies (refer to Appendix J, CORRESPONDENCE).

EXISTING CONDITIONS

Fire Service

The City of Huntington Beach Fire Department operates a total of eight fire stations within the City, including:

- Station 1 (Gothard Station), located at 18311 Gothard Street;
- Station 2 (Murdy Station), located at 16221 Gothard Street;
- Station 3 (Bushard Station), located at 19711 Bushard Street;
- Station 4 (Magnolia Station), located at 21441 Magnolia Avenue;
- Station 5 (Lake Station), located at 530 Lake Street;
- Station 6 (Edwards Station), located at 18590 Edwards Street;
- Station 7 (Warner Station), located at 3831 Warner Avenue; and
- Station 8 (Heil Station), located at 5890 Heil Avenue.

The fire stations serving the project vicinity are Stations 3, 4, and 5. The fire station nearest the project site is Station 4 (Paramedic Engine Company, staff of four), located at 21441 Magnolia Street at a proximity of approximately 0.5 miles from the subject site. Fire Station 3 (Paramedic Engine Company, staff of four) is located at 19711 Bushard Street at a proximity of approximately three miles from the site. Station 5, situated approximately 2.5 miles from the project site, is composed of a Paramedic Engine Company (staff of four), 95-foot aerial ladder (staff of four), and one ambulance (staff of two Emergency Medical Technicians). The average response times to the project site are four minutes from Station 4 and six to seven minutes from Stations 3 and 5. The current Insurance Services Office (ISO) rating of the site is ISO Class II.[1]

Police Service

The proposed project site is served by the City of Huntington Beach Police Department, which operates through one central police station and two smaller substations. Facilities and their locations are as follows:

[1] Letter, Mr. Tim Greaves, City of Huntington Beach Fire Department, September 5, 2001.

- Police Headquarters, located at 2000 Main Street;
- Oakview Center Substation, located at 17483 Beach Boulevard, Suite B; and
- Downtown Substation, located at 204 Fifth Street;

The Police Headquarters facility, located at 2000 Main Street, serves the entire City population of 200,000 residents spread over 27 square miles. The average response time to the project site is approximately four minutes and 30 seconds from any part of the City. The Department currently has 229 sworn police officers, 133 civilian employees and 65 black-and-white patrol units. A total of one to two officers in one to two patrol cars serve the area surrounding the project site vicinity at any one time.[2] The Police Department currently operates three police helicopters. The nearest police facility to the project is the Downtown Substation, situated approximately two miles northwest of the subject site.

Schools

The proposed project site is within the jurisdiction of the Huntington Beach Union High School District and the Huntington Beach City School District. The Huntington Beach Union High School District currently has a total of nine facilities within the Cities of Huntington Beach, Westminster, and Fountain Valley. The high school nearest the subject site is Edison High School, located approximately 0.8 miles to the northeast. Edison High School had a projected enrollment of 2,228 students for the Fall of 2001.[3]

The Huntington Beach City School District has a total of 12 facilities within the City of Huntington Beach. Ten facilities are active schools, while two are currently inactive. The elementary schools nearest the proposed desalination project site are William E. Kettler Elementary School, located at 8750 Dorsett Drive, and John H. Eader Elementary School, located at 9291 Banning Avenue. Both schools are situated approximately 1.5 miles from the desalination plant site. William E. Kettler Elementary has an enrollment of 564 students, while John H. Eader Elementary has an enrollment of 579 students.[4]

Libraries

The Huntington Beach Library System consists of five facilities, including:

- Huntington Central Library and Cultural Center, located at 7111 Talbert Avenue;
- Graham Branch Library, located at 15882 Graham Street;
- Oakview Branch Library, located at 17251 Oak Lane;
- Banning Branch Library, located at 9281 Banning Avenue; and
- Main Street Branch Library, located at 525 Main Street.

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2 Letter, Captain Jon Arnold, City of Huntington Beach Police Department, July 23, 2001.

3 Letter, Ms. Patricia Koch, Huntington Beach Union High School District, July 11, 2001.

4 Letter, Mr. Frank Blonska, Huntington Beach City School District, October 24, 2001.

The Banning Branch Library serves the project vicinity and is located approximately two miles northwest of the subject site. The Banning Branch Library is a small facility and is approximately 2,400 square feet in size. This facility has on average 214 visitors per day and holds 24,197 volumes.[5]

Roadway Maintenance

The City of Huntington Beach Public Works Department provides roadway maintenance to the City of Huntington Beach. The Department performs regular maintenance on City owned roadways in the form of re-paving, pothole/curb repairs, and striping, as well as roadway widenings, expansions, and improvements. The City of Huntington Beach Public Works Department has recently conditioned Newland Street (located west of the subject site) to be improved as a result of ongoing renovations to the AES Huntington Beach Generating Station. In addition, should the underground or the aboveground "North" product water storage tank option be selected, Edison Avenue, located north of the project site, will need to be improved with curb, gutter, sidewalk, street lighting, and paving.[6]

Parks and Recreation

The City of Huntington Beach contains 71 parks with a total area of 577.28 acres. The City's park system includes six mini-parks totaling 2.7 acres, 58 neighborhood parks totaling 157.39 acres, seven community parks totaling 143.28 acres, and two regional parks (Huntington Central Park and Blufftop Park) encompassing 376 acres. Other recreational opportunities within the City include two publicly owned golf courses, Huntington Beach City Gym and Pool, Oak View Center, various bikeways, and approximately two miles of equestrian trails. The City's coastal recreational facilities include the Huntington Beach Municipal Pier, various beach parks, recreational vehicle (RV) camping, and Huntington Harbor (a popular boating area).[7] The recreational facilities nearest the project site are Edison Community Center, Huntington State Beach, and Huntington City Beach, all of which are located within a radius of approximately 0.5 miles. It should also be noted that the City of Huntington Beach is planning to coordinate with the County of Orange to examine the feasibility of a landscaped riding/hiking trail along the Huntington Beach Channel, adjacent to the subject site. The proposed location and points of connection for the trail will be refined during the planning process for the trail.

Wastewater

The Orange County Sanitation District (OCSD) and the City of Huntington Beach Public Works Department, Engineering Division provide sanitation treatment and sewerage services for the City of Huntington Beach. Presently, 98 percent of the City is connected to the sewer system while the remainder use septic tanks. The two wastewater treatment plants serving the City of Huntington Beach, Plant 1 and Plant 2, perform primary and secondary treatment procedures and are operated

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5 City of Huntington Beach General Plan, Public Facilities and Public Services Element, May 13, 1996.

6 Ms. Terri Elliot, City of Huntington Beach Public Works Department, March 15, 2002.

7 City of Huntington Beach General Plan, Recreation and Community Services Element, May 13, 1996.

by the OCSD. Within the City, the wastewater system is comprised of major trunk lines, smaller feeder lines, and lift stations. The OCSD has developed engineering plans for plant improvements anticipated to meet the needs of the City to the year 2050.[8]

The nearest City sewer line is an eight-inch line located north of the project site running along the southern side of the Orange County Flood Control District (OCFCD) flood channel in an east-west direction.[9] A 48-inch Orange County Sanitation District (OCSD) trunk line exists along Newland Street, an 84" line exists within Pacific Coast Highway, and a 78" line is situated within Magnolia Street. OCSD lines also traverse and exist adjacent to the various proposed pipeline alignment alternatives associated with the seawater desalination project.[10]

Storm Water Drainage

The OCFCD and the City of Huntington Beach Public Works Department operate the storm water drainage system within the City of Huntington Beach. The storm drainage system removes water runoff from streets, and, after filtration, transports the runoff to the ocean. The OCFCD owns, operates, maintains, and improves regional flood control facilities. The City of Huntington Beach owns and operates 14 storm drainage channel pumping stations which pump the runoff water into the channels and to the ocean. No runoff from the project site is currently conveyed to the Pacific Ocean via City storm drainage facilities, as only OCFCD facilities provide service to the subject site. Presently, the County and City are in the process of improving flood control facilities to accommodate higher levels of storm water.[11] The OCFCD has plans to improve the Huntington Beach Channel (adjacent to the subject site) in the vicinity of the project site to obtain 100-year regional flood protection, which the Channel currently lacks.

Water

The Huntington Beach Water Division currently produces approximately 34,700 acre feet of potable water per year (afy), an average daily production of 48 cubic feet per second (cfs), and a maximum daily peak of 50 million gallons per day (mgd).[12] Typically, 75% of the City's water is supplied by groundwater wells located within the City, while 25% is imported from the Metropolitan Water District (MWD). Facilities within the City of Huntington Beach consist of 480 miles of water lines (ranging from 2" to 42" in diameter), water booster pumps, and five storage tanks with a combined capacity of 49 million gallons.[13]

Distribution piping in the area consists of looped 12-inch diameter asbestos cement (AC) pipe within Hamilton Avenue, Magnolia Street, and Newland Street. Pipelines within Pacific Coast

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8 City of Huntington Beach General Plan, Utilities Element, May 13, 1996.

9 Letter, Mr. Todd Broussard, City of Huntington Beach Public Works Department, July 16, 2001.

10 Map provided by Angie Anderson, Orange County Sanitation District, September 6, 2001.

11 City of Huntington Beach General Plan, Utilities Element, May 13, 1996

12 Letter, Mr. Tom Rulla, City of Huntington Beach Public Works Department, July 16, 2001.

13 City of Huntington Beach General Plan, Utilities Element, May 13, 1996.

Highway consist of 10-inch and 12-inch AC pipe. In addition, a new service agreement for the AES Huntington Beach Generating Station will relocate their meter service from Pacific Coast Highway to Newland Street.[14] The City is also in the process of siting a new water storage tank within a portion of the AES site (north of the subject site), to improve water service to the local water pressure zone.

Reclaimed Water

The City of Huntington Beach is currently participating in the Green Acres project (GAP) in association with the OCSD and the Orange County Water District (OCWD). The OCSD produces secondary treated water for the OCWD, where the water is treated once again and distributed for industrial use and landscape irrigation in the Cities of Fountain Valley, Santa Ana, Costa Mesa, Newport Beach, and Huntington Beach. In addition, the City of Huntington Beach also plans to implement the Groundwater Replenishment System (GWRS). The GWRS is a major new reclamation project currently being developed by the OCSD and OCWD. This project could increase the City's use of reclaimed water to 400 afy. At the present time, no conveyance facilities are available at or near the subject site, and it is not anticipated that the proposed desalination project will require the use of reclaimed water.[15]

Solid Waste

The County of Orange owns and operates three active landfills. The Frank R. Bowerman Landfill is the closest facility to the project, and will likely be the solid waste facility receiving waste from the proposed project site. Rainbow Disposal has been contracted by the City of Huntington Beach to provide solid waste collection services under a long-term contract. The City generates approximately 348,219 tons of solid waste per year, resulting from 52,220 tons of commercial waste, 155,625 tons of residential waste, and 140,374 tons of demolition/industrial waste.[16] The City is responsible for meeting the Assembly Bill 939 (AB 939) mandate of 50% disposal reduction by the start of 2000, and for preparing AB 939 solid waste planning documents. Rainbow Disposal currently transports City solid waste to a transfer station located within the City and then to either Frank R. Bowerman Landfill or Brea Olinda Landfill.[17]

The California Integrated Waste Management Board requires that all counties have an approved Countywide Integrated Waste Management Plan (CIWMP), which requires sufficient solid waste disposal capacity for at least 15 years. The Orange County landfill system has capacity in excess of 15 years. Consequently, it may be assumed that adequate capacity for the project area is available for the foreseeable future. With regards to daily disposal limitations, the Frank R. Bowerman and Brea Olinda Landfills have been receiving refuse at rates near the maximum limit.

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[14] Letters, Mr. Tom Rulla, City of Huntington Beach Public Works Department, September 12 and July 16, 2001.

[15] Letters, Mr. Tom Rulla, City of Huntington Beach Public Works Department, September 12 and July 16, 2001.

[16] City of Huntington Beach General Plan, Utilities Element, May 13, 1996.

[17] Letter, Ms. Sandra Jacobs, Rainbow Disposal Company, Inc., July 16, 2001.

As Orange County continues to develop, additional daily disposal demands upon County landfills may necessitate modifications to landfill permits, which would require separate discretionary review undertaken by the County of Orange.

Electricity

The Southern California Edison Company (SCE) currently provides electrical service to the City of Huntington Beach. Major facilities owned by SCE within the City include six substations, various transmission lines and switchyards (AES currently owns and operates a power plant within the City, located along Pacific Coast Highway west of Magnolia Street, adjacent to the project site). Currently, SCE service meets the City's demands for electricity.[18]

Gas

The City of Huntington Beach receives natural gas service from the Southern California Gas Company. The Gas Company receives natural gas from Southern California, Northern California, and out of state suppliers. The Gas Company has no immediate plans to update the existing equipment or to implement new technologies aside from the routine maintenance checks and replacements of deteriorating supply lines. The Gas Company is currently meeting present demands and can supply additional natural gas to the City, if required.[19]

Southern California Gas Company facilities within the project vicinity include pipelines along Newland Street (located west of the project site) and Edison Avenue and Hamilton Avenue (located north of the project site).[20]

Telephone and Cable Service

Telephone service to the project vicinity is provided by Verizon. According to data provided by Verizon, telephone facilities in the project vicinity include lines located along Newland Street (located west of the project site), Edison Avenue (located north of the project site), and within AES property (located south of the project site).[21] Cable television service to the City of Huntington Beach is provided by Time Warner Communications. Existing facilities within the project vicinity are located along Newland Street, and are attached to existing SCE utility poles. There are no existing facilities within the proposed project boundaries.[22]

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18 City of Huntington Beach General Plan, Utilities Element, May 13, 1996.

19 City of Huntington Beach General Plan, Utilities Element, May 13, 1996.

20 Letter, Mr. Robert Warth, Southern California Gas Company, July 2, 2001.

21 Letter, Mr. Al Fasano, Verizon, July 3, 2001.

22 Letter, Mr. Bill Jankowski, Time Warner Communications, July 13, 2001.

IMPACTS

Significance Criteria

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains the Initial Study Environmental Checklist form used during preparation of the project Initial Study, which is contained in Appendix A of this EIR. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this Section. Accordingly, a significant impact to public services would occur if the project would result in: 1) substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities; and/or 2) the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services. In addition, significant parks/recreation impacts would occur if the project would: 1) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; and/or 2) include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Fire Service

The project will comply with City of Huntington Beach Fire Department requirements, including the installation of fire sprinklers and fire hydrants. It is not anticipated that project implementation would result in the need for additional Fire Department facilities. The proposed project is not of the scope or nature to create a significant increase in demand for services requiring physical additions to the City of Huntington Beach Fire Department.[23] In addition, the City of Huntington Beach Fire Department, through mutual aid and automatic aid agreements with Orange County and the cities of Westminster, Santa Ana, Newport Beach, Fountain Valley, and Costa Mesa can provide additional staff as needed. Adequate emergency access will be provided in accordance with City and County requirements. Impacts are not anticipated to be significant.

Police Service

The proposed project is not anticipated to create a significant increase in service calls to the project vicinity nor is it expected to create a need for additional police facilities within the City of Huntington Beach. No impacts are anticipated in this regard.[24]

Schools

The proposed project involves the implementation of a seawater desalination facility within the southeastern portion of the City of Huntington Beach. The project does not propose housing or

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[23] Letter, Mr. Tim Greaves, City of Huntington Beach Fire Department, September 5, 2001.

[24] Letter, J.W. Arnold, Captain, City of Huntington Beach Police Department, July 23, 2001.

other student-generating uses. The project is anticipated to have negligible impacts on school facilities within the City of Huntington Beach, and is anticipated to have a student generation rate of .0000356882 per square foot. However, in consideration of A.B. 2926, the Applicant will be required to pay a commercial fee of $0.1287 per square foot for non-residential development within the Huntington Beach Union High School District.[25] The Huntington Beach City School District does not anticipate that the proposed project will have significant student-generating impacts, and does not require assessment fees or other mitigation measures. The project is not expected to generate the need for additional school facilities.[26] No significant impacts are anticipated in this regard.

Libraries

The proposed desalination project is not anticipated to have significant impacts on the City of Huntington Beach library system. Although the nearest library facility to the project site (the Banning Branch Library) is small in size, the project is anticipated to have a negligible impact on the branch.[27] The applicant will be required to pay standard library enrichment fees concurrent with building permit issuance.

Roadway Maintenance

As previously stated, Newland Street has recently been conditioned to be improved, and, should the underground or aboveground "North" product water storage tank option be selected, Edison Avenue will require curb, gutter, sidewalk, street lighting, and paving improvements. Traffic impact fees as determined by the City of Huntington Beach will be collected upon project implementation in order to offset any costs incurred for roadway widenings and intersection capacity improvements.[28] Impacts in this regard are anticipated to be less than significant.

Parks and Recreation

The recreational facilities nearest the project site are Edison Community Center, Huntington State Beach, and Huntington City Beach, all of which are located within a radius of approximately 0.5 miles. The proposed desalination project will be situated in an industrial area and will employ approximately 18 people, with five to seven people on duty during regular working hours Monday through Friday, and a minimum of two people on duty during swing shifts, graveyard shifts, and weekends. The project is anticipated to have a negligible impact on parks and recreation facilities within the City of Huntington Beach. Impacts in this regard are not expected to be significant.

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25 Letter, Ms. Patricia Koch, Huntington Beach Union High School District, July 11, 2001.

26 Letter, Mr. Frank Blonska, Huntington Beach City School District, October 24, 2001.

27 Letter, Mr. Ron Hayden, City of Huntington Beach Library Services Department, July 26, 2001.

28 Letter, Mr. Todd Broussard, City of Huntington Beach Public Works Department, July 16, 2001.

Wastewater

It is anticipated that either a new sewer line will need to be constructed to reach the existing 48-inch OCSD trunk line located along Newland Street, or the project would utilize the existing private sewer system on AES property. The proposed project would produce nominal amounts of domestic wastewater, as the plant would employ approximately 18 people, with five to seven on-site during weekdays and a minimum of two employees on-site during swing shifts, graveyard shifts, and weekends. However, desalination plant operation would require that used RO membrane cleaning solution is discharged into the local sanitary sewer for treatment at the OCSD regional wastewater treatment facility or the existing private sewer system on AES property. Approximately 500,000 gallons of used cleaning solution will be generated per month (90 percent flush water and 10 percent cleaning solution). The City of Huntington Beach will collect applicable sewer connection fees based on the acreage of the subject site.[29] In addition, the OCSD will impose a commercial/industrial connection fee, of which five percent will go to the City of Huntington Beach. These connection fees will offset any impact to the City and OCSD, and will be used to provide system improvements as necessary.

As stated previously in Section 3.0, *PROJECT DESCRIPTION*, the accumulation of silts or scale on the RO membranes would require periodic cleaning to remove these foulants and extend membrane life. Normally cleaning frequency is twice per year. To clean the membranes, a chemical cleaning solution is circulated through the membranes. The reverse osmosis system trains will be cleaned using a combination of cleaning chemicals such as industrial soaps (e.g. sodium dodecylbenzene, which is frequently used in commercially available soaps and toothpaste) and weak solutions of acids and sodium hydroxide (refer to Table 4.3-2, *RO MEMBRANE SOLUTION DISCHARGE VOLUMES).*

A portion of the waste cleaning solution from the washwater tank is proposed to be discharged into the local sanitary sewer for further treatment at the Orange County Sanitation District (OCSD) regional wastewater treatment facility. OCSD has indicated that its facilities are of adequate capacity to accommodate this waste cleaning solution.[30] This solution will be transported using a dedicated on-site pump station with a capacity of 150 to 200 gallons per minute (gpm) and a new eight-inch sewer conveyance pipeline leading off-site to the existing 48-inch OCSD sewer pipeline located within Newland Avenue or a 54-inch OCSD line within Pacific Coast Highway. OCSD has also indicated that the pH and flowrate of the washwater tank discharge would be acceptable, contingent upon the acquisition of a Sewer Connection Permit from the City of Huntington Beach and an Industrial Waste Discharge Permit from the OCSD. It should be noted that the County of Orange's Water Factory 21currently discharges cleaning solution into the OCSD system, similar to the process the proposed desalination plant would utilize. Monitoring of waste cleaning solution water quality will be performed per the requirements of the OCSD for wastewater discharges to the sanitary sewer. The cleaning flush water following the "first flush" will be mixed with the RO plant brine concentrate, treated waste filter backwash, and the AES plant discharge and sent to the

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29 Letter, Mr. Todd Broussard, City of Huntington Beach Public Works Department, April 5, 2001.

30 E-mail from Nikolay Voutchkov, OCSD, to Josie McKinley, Poseidon Resources Corporation, May 29, 2002.

ocean. This "second flush" water stream will contain trace amounts of cleaning compounds and would be below detection limits for hazardous waste. Cleaning of the RO system will be staggered so that on average, two RO trains will be cleaned per month after the first year or so of operation, resulting in approximately 500,000 gallons of used cleaning solution generated per month. Impacts on local wastewater facilities are not anticipated to be significant.

An alternative to discharging the RO membrane cleaning solution into the OCSD system is to discharge the solution into the Pacific Ocean via the AES outfall. Should this alternative be approved by the Santa Ana Regional Water Quality Control Board (SARWQCB), impacts to local wastewater facilities would be further minimized.

Storm Water Drainage

No City of Huntington Beach storm drainage facilities exist within the project vicinity. It is anticipated that the majority of the subject site will be composed of impervious surfaces, thereby increasing the potential amount of surface runoff. However, an on-site local storm water drainage system would be implemented as part of the desalination facility site. The subject site would be divided into two areas (north and south), with catch basins and a storm water pump station located in each area. Storm water flows would first be directed to catch basins by gravity, and would then be directed to a storm water pump via gravity lines. The water would then be pumped to the 48-inch by-product brine discharge line that ultimately connects to the AES outfall line. As alternative options, the desalination facility's on-site storm water system could discharge storm water to the AES on-site storm water system or the City of Huntington Beach local storm water system, both of which ultimately convey storm water to the Pacific Ocean via the AES outfall. No storm water would be discharged into the adjacent Huntington Beach Channel. A Water Quality Management Plan (WQMP) will be prepared for the proposed project as required by the SARWQCB.

Storm water will be treated prior to off-site discharge in order to minimize impacts from urban pollutants. One of two sedimentation methods will be utilized for treatment, including:

- **Waste Filter Backwash Clarifiers:** The proposed desalination plant facility would utilize clarifiers for the purpose of settling the waste stream generated during the backwash of the pretreatment filters. During rainy events, storm water would be combined with the waste filter backwash water and settled in the filter backwash clarifiers. This clarified water would then be combined with the desalination plant's concentrated seawater discharge and sent to the Pacific Ocean via the AES outfall. The waste filter backwash clarifiers would be oversized to accommodate the treatment of storm water.

- **Sedimentation in Separate Clarifiers:** As an alternative to combining on-site storm water with the waste filter backwash, storm water directed to on-site storm drains could be treated in separate sedimentation clarifiers for storm water treatment only. Subsequent to clarification, this water would be discharged via the AES outfall with the desalination plant brine discharge and AES cooling water.

The most viable storm water treatment alternative will be selected during the design phase of the project, in close coordination with the City of Huntington Beach, RWQCB, and AES Huntington Beach Generating Station staff. The storm water facilities will be designed to comply with all applicable requirements of the City of Huntington Beach and the RWQCB.

Water

❖ Water Supply

Implementation of the proposed project would require new facilities to support operational uses (such as pipeline extensions, drinking fountains and restrooms), although these are not anticipated to be of a nature to create significant impacts. It is anticipated that normal domestic demand created by the proposed project can be provided with desalinated water generated on-site. However, should the project require potable water from the City, adequate backflow protection devices will be installed and maintained to ensure that no mixing of potable and subpotable water will occur. The Huntington Beach Water Division expects that impacts associated with the proposed project can be sufficiently mitigated.[31] It should also be noted that no contingency plans for emergency interconnections with adjacent water purveyors currently exist. Impacts in regards to local and regional water supply facilities (local groundwater and imported MWD water) are not anticipated to occur as a result of project implementation.

❖ Water Compatibility

The proposed desalination facility will produce approximately 50 mgd of potable water. This increase in available potable water will improve overall water provision capabilities within the region and will be a beneficial impact in regards to water. However, the mixing of potable water from different sources (thereby having different chemical characteristics) is known to cause potential problems in regards to the corrosion of water facilities, specifically pipes and residential fixtures. This corrosion could potentially cause colored water in homes/businesses, stained fixtures, pipe failures, and non-compliance with the Lead and Copper Rule. It is anticipated that the proposed desalination plant's product water would be comparable in physical characteristics to that of the existing water supply in Orange County (refer to Table 4.6-1, *PRODUCT WATER QUALITY COMPARISON*). The most likely existing potable water source that could blend with the proposed project's product water in Orange County distribution systems is imported water from the MWD's Robert S. Diemer filtration plant. Project water and existing water supply would have compatible regulated inorganic and radioactive qualities, while MWD water would most likely have a slightly higher level or organic carbon content and disinfection by-products such as trihalomethanes and haloacetic acids. Similarly to MWD water, product water from the proposed desalination facility would be chemically conditioned at the plant prior to distribution in order to reduce its corrosion potential. Lime will be used for post-treatment stabilization of the RO water as a source for pH and alkalinity adjustment and hardness addition.

[31] Letter, Mr. Todd Broussard, City of Huntington Beach Public Works Department, April 5, 2001.

Table 4.6-1
PRODUCT WATER QUALITY COMPARISON

	Primary MCL or (Secondary MCL)	Projected Water Quality Orange County Ocean Desalination Plant (Average)	Huntington Beach Potable Groundwater (2002 CCR) (Average)	Seal Beach Potable Groundwater (2001 CCR)	Fountain Valley Potable Groundwater (2001 CCR) (Average)	Newport Beach Potable Groundwater (2001 CCR) (Average)	Irvine Ranch Water District (Groundwater) (2001 CCR) (Average)	MWDSC Diemer Filtration Plant (2001 CCR) (Average)
INORGANICS								
Aluminum (µg/L)	1,000 /(200)	10	<DLR	<DLR	<DLR	<DLR	10	123
Antimony (µg/L)	6	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Arsenic (ug/L)	10	0.01	<DLR	<DLR	<DLR	<DLR	2.7	2.3
Barium (µg/L)	1,000	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Beryllium (µg/L)	4	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Cadmium (µg/L)	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Chloride (mg/L)	(250)	190	28	13	36	57	14	69
Chromium, total (µg/L)	50	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Color (Units)	(15)	1	<DLR	<DLR DS	1.8 DS	<DLR DS	<DLR DS	1
Copper (µg/L) 90th percentile	*	10 (at plant)	323 R	180 R	160 R	270 R	190 R	<DLR
Cyanide (µg/L)	150	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Fluoride (mg/L)	2.0	0.15	0.3	0.37	0.3	0.34	0.29	0.2
Iron (µg/L)	(300)	2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Lead (µg/L) 90th percentile	*	0.5 (at plant)	<DLR	3.1 R	<DLR	<DLR	1.2	<DLR
Manganese (µg/L)	(50)	<DLR	<DLR	<DLR	<DLR	<DLR	39	<DLR
MBAS (mg/L)	0.5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Mercury (µg/L)	2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Nickel (µg/L)	100	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Nitrate (mg/L as NO3)	45	0.5	<DLR	<DLR	3.3	7.5	<DLR	<DLR
Nitrite (mg/L as N)	1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Odor (TCN)	(3)	1	<DLR DS	<DLR DS	1 DS	1.7 DS	<DLR DS	No data
Selenium (µg/L)	50	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR

"MCL" - Maximum Contaminant Level 1
"<DLR" (less than the Detection Limit for Reporting purposes) means the contaminant would not be detected at or above the analytical reporting level established for each contaminant by the California Department of Health Services.
"DS" means samples are collected for compliance purposes from the distribution system, not at the well/treatment plant.
"R" means samples for lead and copper compliance are collected from residential taps, not at the well/treatment plant.

Table 4.6-1 (Cont'd)
PRODUCT WATER QUALITY COMPARISON

	Primary MCL or (Secondary MCL)	Projected Water Quality Orange County Ocean Desalination Plant (Average)	Huntington Beach Potable Groundwater (2002 CCR) (Average)	Seal Beach Potable Groundwater (2001 CCR)	Fountain Valley Potable Groundwater (2001 CCR) (Average)	Newport Beach Potable Groundwater (2001 CCR) (Average)	Irvine Ranch Water District (Groundwater) (2001 CCR) (Average)	MWDSC Diemer Filtration Plant (2001 CCR) (Average)
Silver (µg/L)	100	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Specific Conductance (µmhos/cm)	(900)	720	525	359	589	730	399	732
Sulfate (mg/L)	(250)	20	59	26	67	109	40	149
Thallium (µg/L)	2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
TDS (mg/L)	(500)	350	319	227	360	431	243	432
Turbidity (NTU)	(5)	<DLR DS	No data DS	0.1 DS	0.16 DS	0.02 DS	<DLR DS	0.06
Zinc (µg/L)	(5,000)	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
RADIOACTIVITY (pCi/L)								
Gross alpha	15	<DLR	No data	<DLR	4.7	5.3	1.4	3.6
Gross beta	50	<DLR	No data	No data	No data	No data	No data	6.2
Radium 226 and 228	5	<DLR	No data	No data	No data	No data	No data	<DLR
Strontium 90	8	<DLR	No data	No data	No data	No data	No data	No data
Tritium	20,000	<DLR	No data	No data	No data	No data	No data	No data
Uranium	20	<DLR	No data	No data	4.9	5.2	No data	2.6
VOLATILE ORGANICS (µg/L)								
Benzene	1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Bromoform	THM	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Carbon tetrachloride	0.5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Chlorodibromomethane	THM	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Chloroform	THM	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,2-Dichlorobenzene	600	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR

"MCL" - Maximum Contaminant Level 2
"<DLR" (less than the Detection Limit for Reporting purposes) means the contaminant would not be detected at or above the analytical reporting level established for each contaminant by the California Department of Health Services.
"DS" means samples are collected for compliance purposes from the distribution system, not at the well/treatment plant.
"R" means samples for lead and copper compliance are collected from residential taps, not at the well/treatment plant.

Table 4.6-1 (Cont'd)
PRODUCT WATER QUALITY COMPARISON

	Primary MCL or (Secondary MCL)	Projected Water Quality Orange County Ocean Desalination Plant (Average)	Huntington Beach Potable Groundwater (2002 CCR) (Average)	Seal Beach Potable Groundwater (2001 CCR)	Fountain Valley Potable Groundwater (2001 CCR) (Average)	Newport Beach Potable Groundwater (2001 CCR) (Average)	Irvine Ranch Water District (Groundwater) (2001 CCR) (Average)	MWDSC Diemer Filtration Plant (2001 CCR) (Average)
1,4–Dichlorobenzene	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Dichlorobromomethane	THM	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,1–Dichloroethane	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,2–Dichloroethane	0.5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,1–Dichloroethylene	6	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
t–1,2-Dichloroethylene	10	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Dichloromethane	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,2–Dichloropropane	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,3–Dichloropropene	0.5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Ethylbenzene	300	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Monochlorobenzene	70	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
MTBE	13	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Styrene	100	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,1,2,2–Tetrachloroethane	1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Tetrachloroethylene	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Toluene	150	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,2,4–Trichlorobenzene	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,1,1–Trichloroethane	200	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,1,2–Trichloroethane	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Trichloroethylene	5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Trichlorofluoromethane	150	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,1,2-Trichlorotrifluoroethane	1,200	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Vinyl Chloride	0.5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR

"MCL" - Maximum Contaminant Level 3
"<DLR" (less than the Detection Limit for Reporting purposes) means the contaminant would not be detected at or above the analytical reporting level established for each contaminant by the California Department of Health Services.
"DS" means samples are collected for compliance purposes from the distribution system, not at the well/treatment plant.
"R" means samples for lead and copper compliance are collected from residential taps, not at the well/treatment plant.

Table 4.6-1 (Cont'd)
PRODUCT WATER QUALITY COMPARISON

	Primary MCL or (Secondary MCL)	Projected Water Quality Orange County Ocean Desalination Plant (Average)	Huntington Beach Potable Groundwater (2002 CCR) (Average)	Seal Beach Potable Groundwater (2001 CCR)	Fountain Valley Potable Groundwater (2001 CCR) (Average)	Newport Beach Potable Groundwater (2001 CCR) (Average)	Irvine Ranch Water District (Groundwater) (2001 CCR) (Average)	MWDSC Diemer Filtration Plant (2001 CCR) (Average)
Xylenes	1,750	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
SYNTHETIC ORGANICS (µg/L)								
Alachlor	2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Atrazine	1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
gamma-BHC (Lindane)	0.2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Bentazon	18	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Carbofuran	18	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Chlordane	0.1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
2,4-D	70	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Dalapon	200	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
1,2–Dibromo–3–chloropropane	0.2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Di (2-ethylhexyl)adipate	400	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Di (2-ethylhexyl)phthalate	4	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Dinoseb (µg/L)	7	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Diquat	20	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Endothall	100	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Endrin	2	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Ethylere dibromide	0.05	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Glyphosate	700	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Heptachlor	0.01	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Heptachlor epoxide	0.01	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Hexachlorobenzene	1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR

"MCL" - Maximum Contaminant Level 4
"<DLR" (less than the Detection Limit for Reporting purposes) means the contaminant would not be detected at or above the analytical reporting level established for each contaminant by the California Department of Health Services.
"DS" means samples are collected for compliance purposes from the distribution system, not at the well/treatment plant.
"R" means samples for lead and copper compliance are collected from residential taps, not at the well/treatment plant.

Table 4.6-1 (Cont'd)
PRODUCT WATER QUALITY COMPARISON

	Primary MCL or (Secondary MCL)	Projected Water Quality Orange County Ocean Desalination Plant (Average)	Huntington Beach Potable Groundwater (2002 CCR) (Average)	Seal Beach Potable Groundwater (2001 CCR)	Fountain Valley Potable Groundwater (2001 CCR) (Average)	Newport Beach Potable Groundwater (2001 CCR) (Average)	Irvine Ranch Water District (Groundwater) (2001 CCR) (Average)	MWDSC Diemer Filtration Plant (2001 CCR) (Average)
Hexachlorocyclopentadiene	50	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Methoxychlor	30	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Molinate	20	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Oxamyl	50	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Pentachlorophenol	1	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Picloram	500	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Polychlorinated biphenyls	0.5	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Simazine	4	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
2,4,5-TP (Silvex)	50	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Thiobencarb	70	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
Toxaphene	3	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR	<DLR
MICROBIALS (MPN/100ml)								
Total Coliform - % positives	**	0.1	0	0	0	0	1.2	0.2 DS
Fecal Coliform - % positives	**	0	0	0	0	0	0	0
OTHER ANALYSES (mg/L)								
Alkalinity		10	158	No data	169	179	No data	104
Calcium		10	52	No data	63	79	No data	49
Magnesium		15	7.7	No data	11	13	No data	21
pH (Units)		8.0	8.0	No data	8.0	8.0	No data	8.0
Potassium		5.0	2.6	No data	2.5	3.5	No data	3.5
Sodium		150	44	60	43	55	52	65

"MCL" - Maximum Contaminant Level 5

"<DLR" (less than the Detection Limit for Reporting purposes) means the contaminant would not be detected at or above the analytical reporting level established for each contaminant by the California Department of Health Services.

"DS" means samples are collected for compliance purposes from the distribution system, not at the well/treatment plant.

"R" means samples for lead and copper compliance are collected from residential taps, not at the well/treatment plant.

Using well-established corrosion control strategies and corrosion indices, the project water will exhibit optimal corrosion control before blending with other water sources, and a corrosion monitoring system will be installed in the product water transmission pipeline. Bench and/or pilot scale corrosion control studies will be conducted during the design phase of the proposed project to fine tune the corrosion control strategy. Additionally, prior to project operation, a sequential flushing program will be coordinated with involved water agencies to minimize any sediment disturbance that might occur due to flow reversals in the system. Impacts in regards to water compatibility are not anticipated to be significant.

- Water Quality

The final product water will be disinfected at the proposed desalination facility with free chlorine using sodium hypochlorite to meet the Department of Health Services (DHS) treatment technique requirements for potable water disinfection of a surface water source. Before entering the proposed project's distribution pipeline, the free chlorine residual in the product water will be converted to chloramines by adding ammonia to the product water. Chloramine residual will control bacterial regrowth in the transmission lines and receiving reservoirs in the distribution system more effectively than free chlorine, as free chlorine tends to dissipate more quickly than chloramines. Failure to maintain an adequate residual in the distribution system may cause bacterial regrowth and possible non-compliance with drinking water bacteriological standards. MWD water also contains chloramines as a final disinfectant residual, and both water sources would have compatible chlorine residual levels.

A sampling location will be established near the physical connection point of the proposed project's water transmission pipeline with the OC-44 feeder. With DHS oversight, a monitoring program will be implemented for this location to detect coliform bacteria, heterotrophic bacteria, chlorine residual, disinfection byproducts, aesthetic parameters such as turbidity, odor, and color, as well as corrosion indices. The purpose of this sampling point is to ensure that no degradation of water quality has occurred prior to regional distribution and that mixing of desalinated product water with the existing water supply would be compatible. Impacts in regards to product water quality are not anticipated to be significant.

- Hydraulics

It should also be noted that the distribution of 50 mgd of potable water to southern Orange County may have hydraulic impacts on the regional water distribution system. Project implementation could potentially alter the flow rate and pressure of multiple transmission lines serving the vicinity. Based on hydraulic modeling performed for the proposed project, the following water transmission mains in the project vicinity are not anticipated to be impacted by the proposed project (it is assumed that all facilities discussed below have design features to prevent hydraulic surges):

- East Orange County Feeder #2
- Irvine Cross Feeder
- Coast Supply Line
- Aufdenkamp Transmission Main

- Tri-Cities Transmission Main
- Newport Beach Wells Supply Line

However, the hydraulic characteristics of the OC-44 Pipeline may be affected in one of two ways, depending on whether the pipeline segment in question is east or west of the proposed Poseidon/OC-44 connection point. West of the proposed Poseidon/OC-44 connection point, the flow rate and flow direction would remain unchanged, while a change in water pressure would be negligible (a change of less than five pounds per square inch). East of the proposed connection point, the direction of flow would be reversed, the flow rate would increase, and water pressure would decrease. It is anticipated that maximum flow velocity through this portion of the pipeline would be 7.5 feet per second (fps). All flow rate, pressure, and velocity changes which may occur in the existing pipelines are within pipeline design specifications.

In addition, the hydraulic characteristics of the East Orange County Feeder No. 2 (EOCF #2) may be affected in one of two ways, depending on whether the pipeline segment in question is north or south of the Coastal Junction (the point at which the Tri-Cities and Aufdenkamp Transmission Mains connect to the EOCF #2). North (upstream) of the Coastal Junction, the flow rate within EOCF #2 would decrease. This decrease may allow water pressure to rise, but the resulting change in water pressure would be well within allowable design pressure for the existing pipeline. South (downstream) of the Coastal Junction, the direction of flow would be reversed, the water pressure would rise, and the flow rate would increase to a maximum velocity of 3.6 fps. It is anticipated that the pressure class of the existing pipeline is of sufficient strength to accommodate changes incurred by the proposed project.

Additional modeling will be performed during the design phase of the project to confirm that the proposed project will not have significant impacts on regional water transmission facilities, including detailed hydraulic analysis that addresses surge control investigation. It should also be noted that the installation of the 42- to 48-inch product water delivery pipeline within existing street right-of-way (ROW) would consume underground space for utilities along the streets the pipeline is proposed to occupy. However, it is anticipated that the project's water delivery pipeline would be buried deep enough to allow for the installation of smaller utilities (telephone, cable television, electricity, small diameter pipes) crossing above. In addition, preliminary analysis indicates that there is adequate space in Hamilton Avenue for the proposed pipeline and its utilities. Future projects requiring space for underground utilities along the proposed project's pipeline alignment may be required to use an alternative route where adequate space is available.

Reclaimed Water

The City of Huntington Beach currently utilizes limited amounts of reclaimed water, although the City is planning to expand its use of reclaimed water through the Green Acres Project and Groundwater Replenishment System. The proposed project is not anticipated to require the use of reclaimed water or installation of reclaimed water facilities, as the project itself will be a new reclamation source. Impacts in this regard are not anticipated to be significant.[32]

[32] Letter, Mr. Tom Rulla, City of Huntington Beach Public Works Department, July 16, 2001.

Solid Waste

The Frank R. Bowerman and Brea Olinda Landfills are the two landfills that are presently used in the disposal of municipal solid waste from the project area. The landfills have sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs. Rainbow Disposal Company will provide solid waste pick-up for the proposed project site as long as access is granted.[33] In addition, the applicant will prepare a waste reduction plan for the construction and demolition (C&D) waste generated from this project. Impacts in this regard are anticipated to be less than significant.

Electricity

Based upon power consumption of 15 kilowatt hours per thousand gallons (4,887 kilowatt hours per acre-foot), the proposed 50 mgd (56,000 AF per year) desalination plant will require approximately 30 to 35 megawatts per hour to produce and distribute potable water. As such, the daily energy consumption of the plant is estimated to be between 720 to 840 megawatt hours per day.

In order to take advantage of lower cost power pricing, the facility may utilize off-peak power to the maximum extent practicable by temporarily halting the production of potable water from the facility and instead pumping product water from the product water storage tank. No back-up electrical generators will be incorporated into the proposed project site, as emergency power/back-up power would be drawn from the AES power facility's auxiliary reserve bank. Back-up power for the off-site underground booster pump station will be provided by two 3,500 kilowatt generator sets using diesel fuel. Maximum emissions from the back-up offsite generators are limited to 500 hours of operation.

The proposed desalination facility's electrical power source will be controlled by a power marketing company, which, in consultation with the California Independent System Operator (Cal ISO), will obtain power from the AES Huntington Beach Generating Station and/or the California power market at the lowest cost possible. As such, a variety of base-, intermediate- and peak-load power generating facilities may produce power for the desalination facility. Typically, base-loaded power plants (such as California's two nuclear power plants and out-of-state coal-fired power plants) as well as several large hydroelectric power dams are the primary source of off-peak power serving Southern California. Intermediate and peak load plants are typically fossil fuel generating facilities (predominantly natural gas fired).

Electric power generating plants are distributed throughout the state, and the project's electrical demand would be met by dozens of power plants connected to a regional power supply source, with many of those plants located outside of Southern California. SCE is prepared to install electrical distribution facilities to the subject site.[34] Impacts in this regard are anticipated to be less than significant (also refer to Section 4.4, *AIR QUALITY*)

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[33] Letter, Ms. Sandra Jacobs, Rainbow Disposal Company, Inc., July 16, 2001.

[34] Letter, Ms. Spring Bowles, Southern California Edison, June 28, 2001.

Gas

The Southern California Gas Company can provide gas service to the proposed project via numerous gas mains surrounding the subject site.[35] Project implementation would not result in any construction related impacts to the service area. No impacts are anticipated in this regard.

Telephone and Cable

Currently, Verizon has telephone facilities located along Newland Street (located west of the project site), Edison Avenue (located north of the project site), and within AES property (located south of the project site). Verizon will be available to provide telephone service to the subject site from existing facilities.[36] Cable television access to the City of Huntington Beach is provided by Time Warner Communications. Time Warner does not anticipate any impacts to its facilities as a result of project implementation. However, short-term impacts to Time Warner facilities may occur if utility poles along Newland Street are relocated.[37] Impacts are anticipated to be less than significant.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

The long-term operation of an aboveground product water storage tank is not anticipated to result in increased impacts to public services and utilities in comparison to the proposed project. The proposed aboveground tank would not increase demand for public services nor would it create the need for additional public facilities, as it would store water for subsequent distribution into the potable water system. The optional tank site would contain all storm water on-site with the implementation of a storm water collection system which would convey all runoff to the desalination facility's storm water system for treatment (if necessary) and discharge into the Pacific Ocean via the AES outfall. As such, with the incorporation of recommended mitigation measures, impacts in this regard are anticipated to be less than significant.

MITIGATION MEASURES

Fire Service

None required.

Police Service

None required.

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35 Letter, Mr. Robert Warth, The Gas Company, July 2, 2001.

36 Letter, Mr. Al Fasano, Verizon, July 3, 2001.

37 Letter, Mr. Bill Jankowski, Time Warner Communications, July 13, 2001.

Schools

PSU-1 Prior to the issuance of building permits, the Applicant will be required to pay a commercial fee of $0.1287 per square foot for non-residential development.

Libraries

None required.

Roadway Maintenance

PSU-2 The Applicant will be required to pay appropriate traffic impact fees as determined by the City of Huntington Beach Department of Public Works.

Parks and Recreation

None required.

Wastewater

PSU-3 The Applicant will be required to pay the prevailing sewer connection fee plus five percent of the OCSD connection fee.

Drainage

Refer to Section 4.3, *HYDROLOGY AND WATER QUALITY.*

Water

PSU-4 The Applicant will be required to pay appropriate fees for water service connections, installation, and meters. In addition, the City requires payment of a service fee for industrial customers.

Reclaimed Water

None required.

Solid Waste

PSU-5 The Applicant will coordinate with the City's recycling representative to ensure that the proposed project is in compliance with the City's waste reduction and recycling program.

PSU-6 Prior to the issuance of a grading permit, the Applicant will prepare a waste reduction plan for the generation of construction and operational waste from the proposed project.

This plan will be submitted to the recycling coordinator from the City of Huntington Beach who will ensure that AB 939 requirements are properly addressed.

Electricity

None required.

Gas

None required.

Telephone and Cable Service

None required.

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.7 AESTHETICS / LIGHT & GLARE

Visual resources information in this section was compiled from site photographs and site surveys conducted by RBF Consulting on June 22, 2001. Project impacts on the aesthetic character of the site from grading activities and building construction are analyzed and evaluated in relation to existing and surrounding site conditions. Consideration of public scenic views, introduction of new sources of light and glare, and compatibility of the proposed project with adjacent local aesthetic resources are included in this section. Construction-related impacts are addressed in Section 4.9, CONSTRUCTION RELATED IMPACTS. As the proposed off-site pipelines and underground pump station would be subsurface, there are no anticipated long-term aesthetic impacts.

EXISTING CONDITIONS

AESTHETICS

On-Site

The existing site's aesthetic quality can be characterized as low to non-existent, considering that the site is located within an industrial fuel oil storage tank area formerly used in conjunction with the AES Huntington Beach Generating Station. The approximately seven-acre site is currently developed with three fuel storage tanks. Two fuel oil storage tanks exist on-site and are 205 feet in diameter and 40 feet in height, while a distillate fuel tank also exists on-site and is 67 feet in diameter and 25 feet in height. The exterior shell of all three tanks is composed of a non-reflective metal surface. Containment berms of approximately 15 feet in height surround the perimeter of each tank. The site is fully-developed, with no unique vegetation or other visual resources (refer to Exhibit 2, *SITE VICINITY MAP* and Exhibit 17, *SITE PHOTOGRAPHS*).

Off-Site

Views of the AES Generating Station are available from numerous areas surrounding the project site, including: Huntington-By-The-Sea Mobile Home Park (located to the west); Beach Boulevard (located to the west); limited locations along Hamilton Avenue (located to the north); limited locations along Huntington State and Huntington City Beaches; and from the vicinity of the intersection of Magnolia Street and Pacific Coast Highway. However, since the proposed project is located behind the main AES structures and surrounded by 10-foot by 15-foot high earthen berms, views from the surrounding area are limited. Surrounding adjacent land uses include the AES Huntington Beach Generating Station to the southwest, a wetland area to the southeast, the Orange County Flood Control District (OCFCD) flood channel to the east, a fuel oil storage tank to the north, and an electrical switchyard to the west. Additional surrounding land uses include Pacific Coast Highway to the south, the Edison Pipeline and Terminal Company (EPTC) storage tank facility to the east, Ascon/Nesi Landfill to the northeast, commercial, industrial, recreational, and residential uses to the north, and Newland Street, Huntington-By-The-Sea Mobile Home Park, and Cabrillo Mobile Home Park to the west (refer to Exhibit 17, *SITE PHOTOGRAPHS*). The Pacific Ocean, Huntington State Beach, and Huntington City Beach are located south of the subject site and can be characterized as high in aesthetic value. Uses surrounding the proposed pipeline route and underground pump station vary depending upon the location, although uses generally consist of residential with some commercial, school, recreational and medical (Fairview State

Hospital in the City of Costa Mesa) uses (refer to Exhibit 18, *PIPELINE ALIGNMENT PHOTOGRAPHS*).

LIGHT AND GLARE

On-Site

The current uses on-site produce minimal light and glare due to the lack of high intensity lighting and absence of reflective surfaces on existing facilities. A minimal amount of nighttime security lighting currently exists on-site. Lighting fixtures are located sporadically throughout the project site, on poles and mounted on the existing storage tanks.

Off-Site

Existing off-site sources of light and glare surrounding the project site, proposed pipeline alignments, and proposed underground pump station site include street lighting, automobile headlights, and nighttime security lighting. Facility lighting and nighttime security lighting are utilized at the Edison Community Center and Edison High School situated northeast of the project site, while Beach Boulevard (a major arterial located west of the project site) produces light and glare as a result of heavy automobile traffic and street lighting.

IMPACTS

Significance thresholds in this Section are based on the CEQA Appendix G Environmental Checklist Form as indicated below.

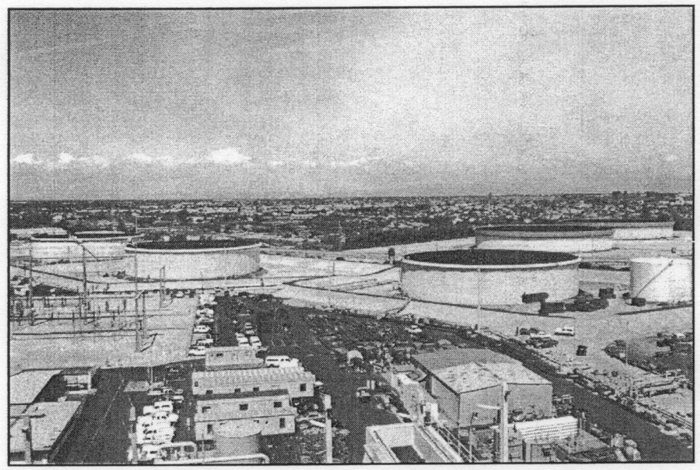
Significance Criteria

A potentially significant impact to aesthetics would occur if the project caused one or more of the following to occur:

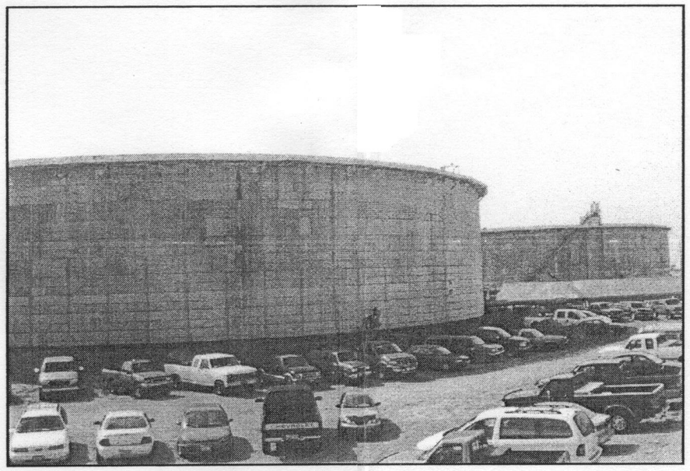
- The project were to affect a scenic vista or scenic highway;
- The project were to have a demonstrable negative aesthetic effect; and/or
- The project were to create adverse light or glare effects.

The significance of an aesthetic impact, in terms of this project, can be determined by examining anticipated project effects from a number of different vantage points, including construction-related visual disruption, observer position, and changes to the existing visual character of the area.

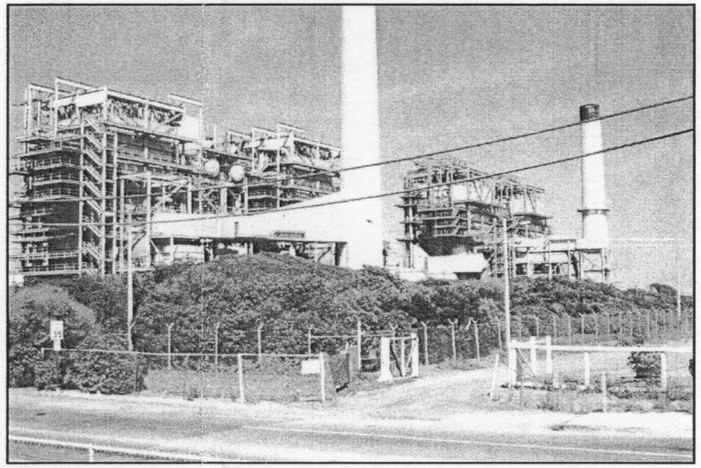
For a discussion of short-term, construction-related aesthetic impacts, refer to Section 4.9, *CONSTRUCTION RELATED IMPACTS.*



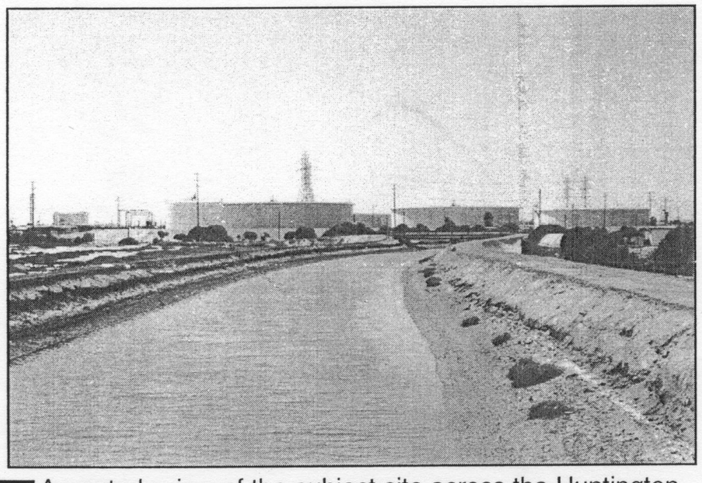
A View of the project site in a northeasterly direction from the AES facility.



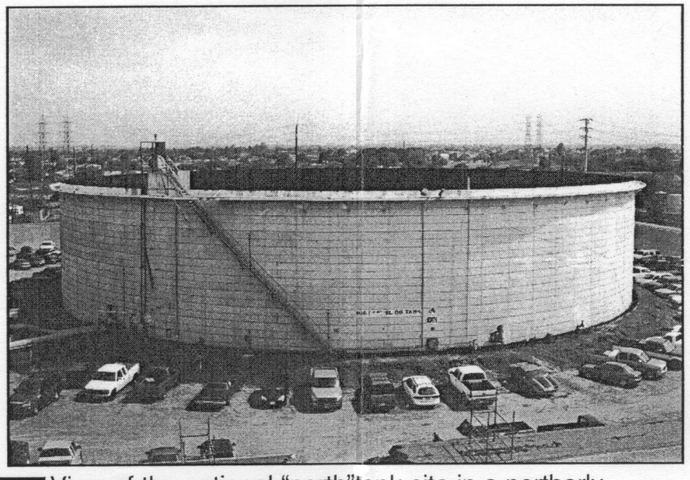
B A southerly view of the subject site from the northwestern corner of the site.



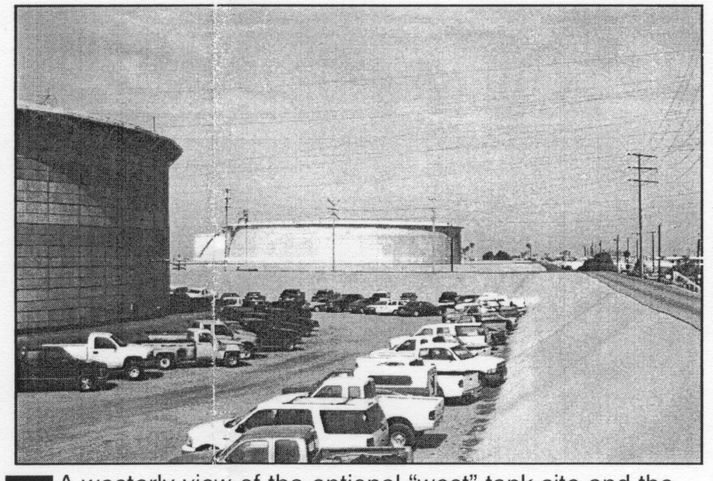
C View of the AES Huntington Beach Generating Station (situated southwest of the subject site) in an easterly direction from Newland Street.



D A westerly view of the subject site across the Huntington Beach Channel.



E View of the optional "north"tank site in a northerly direction.



F A westerly view of the optional "west" tank site and the northern portion of the "north" tank site.

POSEIDON SEAWATER DESALINATION PROJECT

Site Photographs

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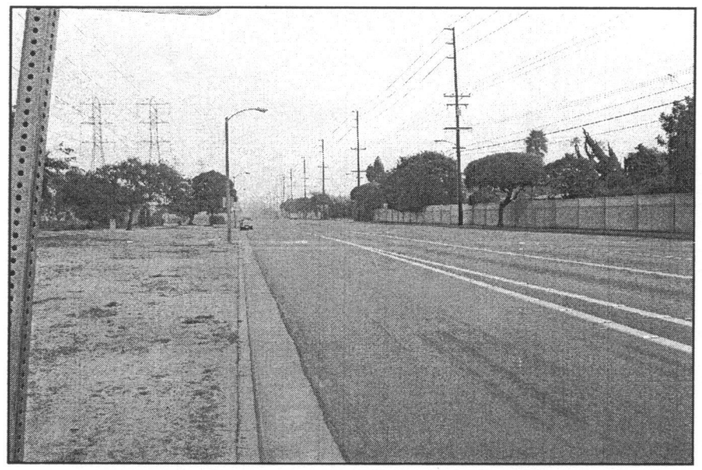
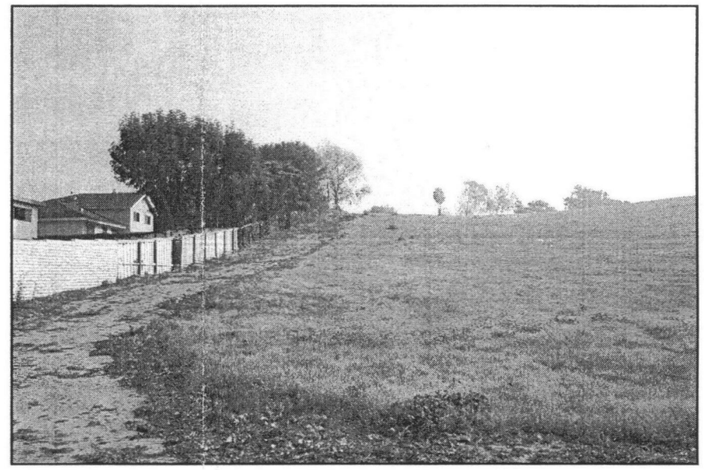
Exhibit 17

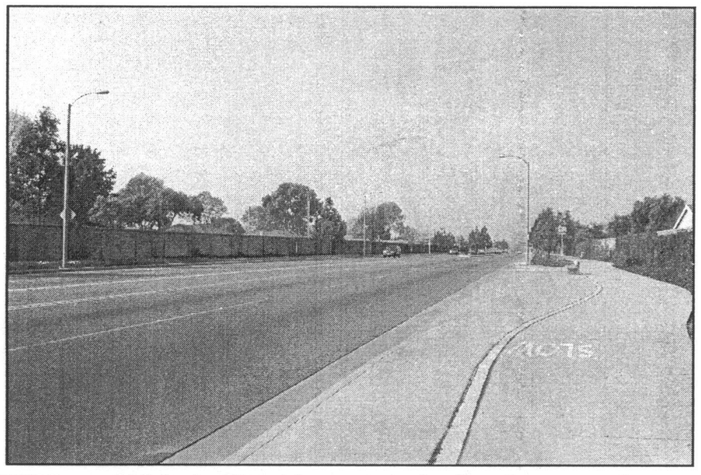


A An easterly view of Hamilton Avenue, near the intersection of Hamilton Avenue and Magnolia Street (Primary and Alternative Alignment)

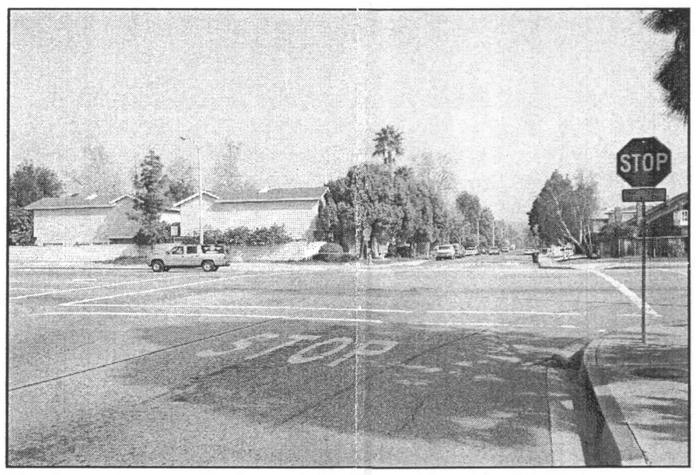
B A southerly view of Magnolia Street, between Hamilton Avenue and Adams Avenue.



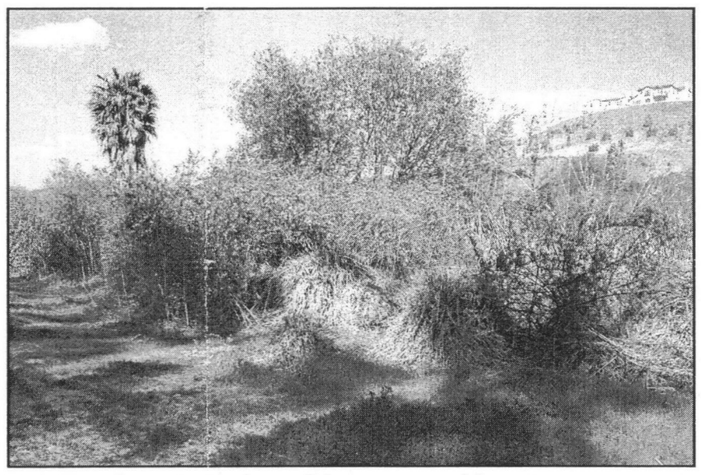
C An easterly view of the Primary Alignment at the Costa Mesa Country Club.



D View of Victoria Street in a westerly direction, near the intersection of Victoria Street and Monrovia Avenue (Alternative Alignment).



E A northeasterly view of the Elden Avenue/Del Mar Avenue intersection, the point at which both alignment alternatives will connect to the OC-44 line in the City of Costa Mesa.



F A northwesterly view of the proposed booster pump station within an unincorporated area of the County of Orange.

POSEIDON SEAWATER DESALINATION PROJECT

Pipeline Alignment Photographs

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

06/02 JN 10-101409

Exhibit 18

SITE CHARACTER

The project site exists as part of a fuel oil storage tank facility within an industrial area. Prominent industrial facilities within the vicinity include the AES Huntington Beach Generating Station and the EPTC storage tank facility. The existing project site can be described as low to non-existent in aesthetic value, as the existing fuel storage tanks are as large as 40 feet in height and 205 feet in diameter, and lack aesthetic or architectural enhancements. Currently, no aesthetic screening exists around the proposed project site. The proposed project would improve the aesthetic character of the site vicinity by replacing the existing dilapidated storage tanks with multiple buildings/structures featuring contemporary architectural design features and significant amounts of landscaping and aesthetic screening techniques in order to minimize any potential impacts of the project on the surrounding community.

Landscaping improvements would be focused primarily on the eastern and northern portions of the subject site (refer to Exhibit 19, *CONCEPTUAL LANDSCAPE PLAN*). Landscaping selection would match those currently being proposed for the AES Huntington Beach Generating Station perimeter. Landscaping within the northern portion of the subject site would consist of Melaleuca quinquenervia (Cajeput Tree), *Eucalyptus lehmannii* (Lehmans Mallee), *Callistemon viminalis* (Weeping Bottle Brush Tree), turf, and ornamental drought/salt tolerant shrub and ground cover. Additional landscaping within the eastern portion of the project site would consist of a native wetlands planting area, situated east of the administrative building. The project would adhere to all City requirements with regard to building heights, landscaping, lighting, setbacks and lot coverage. Therefore, the project is considered to represent a positive impact relative to change in the existing on-site character.

LIGHT AND GLARE

Existing on-site lighting is limited to sporadic light fixtures mounted on poles and on the existing fuel storage tanks. In addition, the site is void of reflective surfaces capable of producing significant amounts of glare. Additional light fixtures may be necessary for long-term operational use, although any new lighting would be subject to City design standards and would utilize directional lighting techniques and low wattage bulbs (without compromising site safety or security) in order to direct light downwards and minimize light spillover. Project implementation may also result in a minimal amount of additional reflective surfaces on proposed structures, and from vehicles utilizing the facility. However, the resulting glare effects would be relatively minor when compared to existing levels of glare in the site vicinity. Additional lighting or glare-inducing surfaces will not occur as a result water transmission pipeline or underground booster pump station implementation, as both the pipeline alignment and underground pump station will occur underground. This impact is considered less than significant with implementation of standard design practices and required mitigation.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

The existing "West" and "North" tank sites are developed with fuel oil storage tanks formerly used in conjunction with the Huntington Beach Generating Station. These tanks were constructed in

1961, and have not been used since the late 1980's, when the Generating Station switched to natural gas as its fuel source. Each tank is approximately 200 feet in diameter and 40 feet high. The tanks are surrounded by 10 to 15 foot high containment berms on all sides.

Impacts due to the implementation of an aboveground storage tank option would be greater when compared to those of the proposed project, which would utilize an underground tank. The use of a tank 250 feet in diameter and a maximum of 30 feet in height in association with desalination plant operation would add to the aesthetic impact of the proposed project in regards to surrounding uses and local roadways. However, the optional tank would be constructed of non-glare producing materials, and would include nighttime security lighting for safety. When considering that the optional tank (30 feet high) would replace a dilapidated fuel oil storage tank (40 feet high) with a product water tank featuring contemporary design features, aesthetic screening, and landscaping, impacts in this regard are anticipated to be less than significant.

MITIGATION MEASURES

SITE CHARACTER

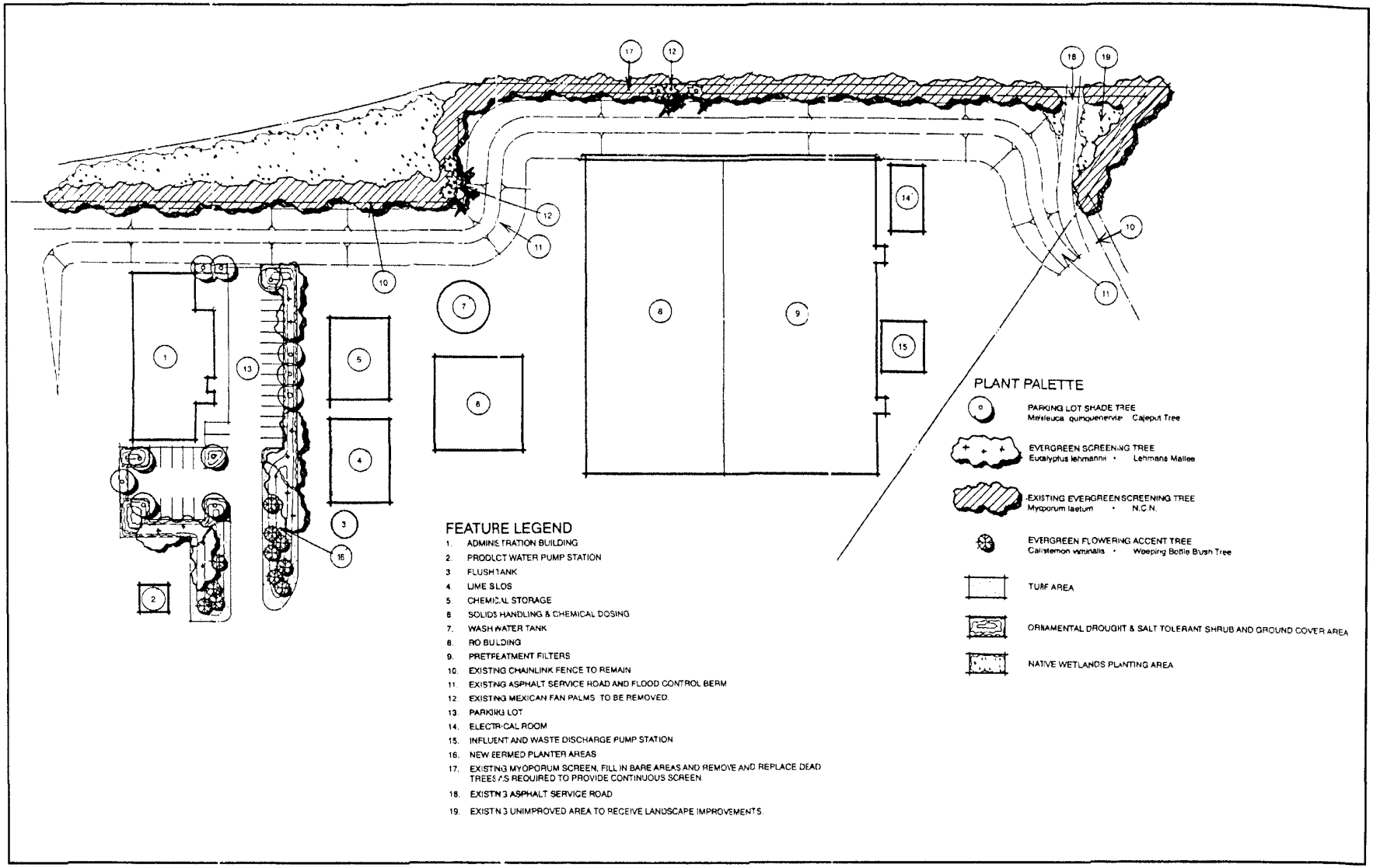
ALG-1 For areas visible by adjacent existing or proposed residential areas, exterior mechanical equipment shall be screened from view on all sides, and rooftop mechanical equipment shall be set back 15 feet from the exterior edges of the building. Equipment to be screened includes, but is not limited to, heating, air conditioning, refrigeration equipment, plumbing lines, duct-work and transformers. Said screening shall be architecturally compatible with the building in terms of materials and colors. If screening is not designed specifically into the building, a rooftop mechanical equipment plan showing screening must be submitted for review and approval with the application for building permit(s).

LIGHT AND GLARE

ALG-2 If outdoor lighting is included, light intensity shall be limited to that necessary for adequate security and safety. All outside lighting shall be directed to prevent "spillage" onto adjacent properties and shall be shown on the site plan and elevations.

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.



Source: Poseidon Resources Corporation • JRMA, December 21, 2001.

Not to Scale

POSEIDON SEAWATER DESALINATION PROJECT

Conceptual Landscape Plan

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

06/02 JN 10-101409

Exhibit 19

4.8 HAZARDS & HAZARDOUS MATERIALS

This section addresses potential impacts associated with the physical effects of the site due to the historic storage fuel oil within the boundaries of the subject site. Any potential site contamination, including soil and groundwater, is discussed within this section. Information contained in this section is based on the Huntington Beach Generating Station Phase II Environmental Site Assessment (prepared by CH2M HILL, November 27, 1996), the Site Investigation Report for Soil and Groundwater, Huntington Beach Generating Station, Huntington Beach, California (prepared by Woodward-Clyde, May, 1998), the Preliminary Hazardous Materials Assessment for the Southeast Coastal Redevelopment Plan (prepared by RBF Consulting, January 11, 2001), and the Environmental Assessment for the Southern California Edison Huntington Beach Fuel Oil Storage Tank Removal Project (prepared by Arthur D. Little, Inc., April 20, 2000).

EXISTING CONDITIONS

ON-SITE

The subject site, formerly owned and operated by Southern California Edison (SCE), is currently developed with three fuel storage tanks. Two fuel oil storage tanks exist on-site (designated the "South" and "East" tanks) and are 205 feet in diameter and 40 feet in height, while a distillate fuel tank also exists on-site and is 67 feet in diameter and 25 feet in height. It is anticipated that the South and East tanks contain approximately 200,000 to 350,000 gallons of fuel oil, while the distillate tank likely contains approximately 20,000 to 30,000 gallons of distillate fuel. The exact amounts of remaining fuel within the storage tanks will not be known until the tanks are opened and inspected. Containment berms of 10-15 feet in height surround the perimeter of each tank. The South and East tanks are constructed of a thin, metal external shell and an internal insulated layer approximately two inches thick. This insulation material may contain asbestos, although the existence of asbestos will not be determined until the tanks are opened and inspected. The distillate fuel tank consists of a thin metal external shell, but unlike the larger fuel oil tanks, lacks an internal insulated layer.

In October and November, 1996, CH2M HILL advanced a total of 19 borings within the boundaries of the former fuel oil storage facility in which the subject site is located. 35 soil samples were collected from these borings, in addition to five groundwater samples. Soil samples were collected from depths near the ground surface (0.5 feet below ground surface) and also at five-foot intervals to depths of approximately 10 feet below ground surface (bgs). Groundwater was encountered at depths of approximately seven to eight feet bgs within the subject site vicinity. Four soil samples and one groundwater sample were taken surrounding the South and East tanks, while three soil samples and one groundwater sample were taken surrounding the distillate tank. All samples were analyzed for total petroleum hydrocarbons-diesel (TPH-D). In addition, one sample near the distillate fuel tank was tested for volatile organic compounds (VOCs). TPH-D levels exceeded the Los Angeles Regional Water Quality Control Board (LARWQCB) maximum soil screening level of 1,000 mg/kg, with samples as high as 5,200 mg/kg in the vicinity of the East tank and 5,000 mg/kg near the distillate tank at depths of 0.5 feet bgs and five feet bgs, respectively. VOCs above the screening level were not detected on-site. TPH-D was detected at concentrations of 2.6 mg/L in groundwater collected from the northern portion of the project site. It is unknown whether this value

exceeded LARWQCB thresholds for groundwater, as thresholds are established on a site-by-site basis.[1]

OFF-SITE

Additional soil and groundwater samples collected by CH2M HILL within the fuel oil storage facility but outside of project site boundaries were also analyzed for TPH-D and VOCs. TPH-D was detected above screening criteria near tanks located to the west and south of the subject site, with levels as high as 65,000 mg/kg. In addition, TPH-Diesel was detected at levels of 0.51 mg/L and 2.6 mg/L in groundwater samples taken from west and south of the project site, respectively.

A soil and groundwater investigation was performed for the AES Huntington Beach Generating Station (Woodward-Clyde, May, 1998), located immediately southwest of the project site. It was concluded that the screening criteria for petroleum impacted soils was not exceeded, while several metals, including antimony, arsenic, cadmium, cobalt, lead, mercury, selenium, silver, aluminum, iron, nickel, vanadium, copper, and molybdenum, exceeded average metal concentrations in soil for California. Numerous VOCs exceeded state and federal maximum contaminant levels (MCLs) in groundwater, while no SVOCs were detected above potential "threshold" concentrations in groundwater sampled at the Huntington Beach Generating Station. Various metals, including arsenic, thallium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, and selenium were also found to exceed existing MCL's. Other groundwater contaminants exceeding state and federal MCL's include fluoride, chloride, sulfate, and total dissolved solids (TDS).

Two other petroleum-related storage tank facilities are situated within the project vicinity, including the Edison Pipeline and Terminal Company and the CENCO Marine Terminal. The Edison Pipeline and Terminal Company (EPTC) tank farm is located immediately east of the subject site, containing three fuel oil storage tanks exist on-site, each with a capacity of 21 million gallons. A baseline tank study completed by SCE indicates that TPH levels of up to 7,500 mg/kg exist on-site, resulting from occasional spraying of oil on the soil for corrosion protection. The CENCO Marine Terminal, a former crude oil storage site, is located northwest of the project site. Prior to its demolition, the facility consisted of eight crude oil storage tanks. On-site hydrocarbon contamination was detected and remediation is ongoing.

The Ascon/Nesi Landfill, situated immediately east of the subject site, was utilized primarily as a dumping ground for oil drilling wastes until its closure in 1984. Evidence of petroleum and hydrocarbon related contamination exists throughout the site primarily in the form of lagoons filled with oil drilling waste liquids. CH2M HILL performed groundwater sampling near the northern border of the proposed project site and the Ascon/Nesi Landfill. TPH-D and VOCs were not detected in the groundwater samples collected, downgradient of the Ascon/Nesi Landfill site.

[1] Yue Rong, Los Angeles Regional Water Quality Control Board, April 11, 2002.

IMPACTS

Significance thresholds in this section are based on the CEQA Appendix G Environmental Checklist Form as indicated below:

Significance Criteria

A potentially significant impact in regards to hazards and hazardous materials would occur if the project caused one or more of the following to occur (additional criteria are addressed in Section 7, *EFFECTS FOUND NOT TO BE SIGNIFICANT*).

- The project were to create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials;
- The project were to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- The project were to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

For a discussion of short-term, hazards/hazardous materials impacts in regards to remediation, construction, and demolition, refer to Section 4.9, *CONSTRUCTION-RELATED IMPACTS*.

LONG-TERM OPERATIONAL IMPACTS

Existing On-Site and Off-Site Contamination

The proposed desalination project is not anticipated to result in long-term impacts in regards to existing on- and off-site soil and groundwater contamination. The project would facilitate the remediation of fuel contamination surrounding the fuel oil storage tanks/distillate fuel tank within the boundaries of the proposed subject site. In addition, demolition of the fuel storage tanks would also involve the abatement of asbestos and lead-based paint, if detected. The majority of contaminants both on- and off-site (including the Ascon/Nesi Landfill) are petroleum-based, and are not considered toxic or acutely hazardous. The proposed project is expected to have a beneficial impact in regards to long-term hazards and hazardous materials.

Project Operation

The proposed project involves the implementation of a 50 mgd seawater desalination plant, and will involve the storage, handling, and use of hazardous materials. Hazardous materials would be utilized for three components of desalination plant operation: 1) periodic cleaning of the RO membranes which filter impurities from seawater; 2) treatment of potable product water; and 3) storage of diesel fuel for emergency backup electricity generators at the off-site underground pump station.

RO Membrane Cleaning Solution

As stated previously within Section 3.0, *PROJECT DESCRIPTION*, the accumulation of silts or scale on the RO membranes causes fouling which reduces membrane performance. The membranes will be periodically cleaned to remove these foulants and extend membrane life. Normally cleaning frequency is twice per year. To clean the membranes, a chemical cleaning solution is circulated through the membranes. The reverse osmosis system trains will be cleaned using a combination of cleaning chemicals such as industrial soaps (e.g. sodium dodecylbenzene, which is frequently used in commercially available soaps and toothpaste) and weak solutions of acids and sodium hydroxide. The cleaning process includes two steps: first, circulating a number of cleaning chemicals in a predetermined sequence through the membranes; and second, flushing the cleaned membranes with clean water (permeate) to remove the waste cleaning solutions and prepare the membranes for normal operation. It should be noted that the actual cleaning chemicals used will be based on the observed operation and performance of the system once it is placed in operation. The cleaning solution is composed of the following chemicals:

Citric acid, two percent solution: The Material Safety and Data Sheet (MSDS) for citric acid states that acute overexposure would cause eye/skin irritation, irritation of the respiratory tract if inhaled, and nausea, vomiting, cramps, and acidic irritation of mouth and throat if ingested.

Sodium hydroxide B, 0.1 percent solution: According to the MSDS for this material, acute exposure to sodium hydroxide may cause severe burns to exposed tissues (including the eyes), injury to the entire respiratory tract if inhaled, and severe injury to the digestive system if ingested.

Sodium tripolyphosphate B, two percent solution: The MSDS for sodium tripolyphosphate indicates that acute overexposure to this material would cause minimal to moderate irritation to the eyes. Human industrial experience has not shown this chemical to be an inhalation hazard.

Sodium dodecylbenzene B, 0.25 percent solution: According to the MSDS for this material, sodium dodecylbenzene would cause irritation to exposed tissues (including the skin/eyes), and irritation to the respiratory or digestive systems, if inhaled or ingested, respectively.

Sulfuric acid B, 0.1 percent solution: The MSDS for sulfuric acid indicates that acute overexposure would result in burns to any exposed area such as the eyes, skin, and respiratory tract.

The citric acid, sodium hydroxide, sodium tripolyphosphate, and sodium dodecylbenzene will be delivered to the subject site in 400-gallon plastic containers, and will be stored in the RO building within concrete enclosures. A drainage system will be provided for chemical evacuation in the event of an accidental spill. As these chemicals would not be used frequently, they would be delivered to the site on an as-needed basis, and no more than one container per chemical would

typically be stored or used at one time. Storage for sulfuric acid is described below, under *PRODUCT WATER TREATMENT MATERIALS*.

Product Water Treatment Materials

In addition to the RO membrane cleaning solution, a number of additional chemicals for water treatment will be used, stored, and handled on-site (refer to Table 4.8-1, *PRODUCT WATER TREATMENT CHEMICAL USAGE SUMMARY*). A description of each chemical product water treatment is provided below:

Table 4.8-1
PRODUCT WATER TREATMENT CHEMICAL USAGE SUMMARY

Chemical	Purpose	Normal Concentration	Chemical (lb/day)	Solution (gal/day)	Day Tank Capacity (gallons)	Bulk Storage Capacity* (gallons)
Sodium Hypochlorite	Prevent Biological Growth	12%	1,542	1,541	2,000	10,000
Ferric Sulfate	Enhance Filter Performance	70%	15,420	2,641	N/A	40,000
Polymer	Enhance Filter Performance	0.5%	385	9,244	10,000	5,000 lbs.
Sulfuric Acid	Positive LSI to Membranes	92%	24,672	3,215	4,000	60,000
Sodium Bisulfate	Remove Chlorine	20%	4,626	2,773	3,000	30,000
Lime (If required)	Stabilize Product Water	15%	11,676	9,333	10,000	200,000
Sodium Hypochlorite	Disinfection	12%	667	667	1,000	10,000
Ammonia	Disinfection	29%	206	95	100	1,000

Source: Poseidon Resources Corporation, September 28, 2001.

* Bulk storage capacities are based on the amount of storage capacity necessary for two weeks of operation at proper design dosage rates.

Sodium hypochlorite (chlorine): Chlorine will be delivered in liquid form as a 12% sodium hypochlorite solution. The liquid sodium hypochlorite will be stored in suitable tanks within an enclosed concrete containment structure with a 110-percent spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals, and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. Storage tanks will be high-density polyethylene (HDPE) or fiberglass-reinforced polyester (FRP). All piping, pumps, valves, and other

ancillary equipment will be manufactured of materials compatible with this chemical. Generally, polyvinyl chloride (PVC) will be used for low-pressure piping, and lined Teflon piping will be used for high-pressure service. All metals, with the exception of titanium, silver, gold, and platinum will be avoided in pumps and pumping elements, as well as any other piece of equipment that can be expected to come in direct contact with the chlorine solution. No chlorine gas will be present on-site. According to the Material Safety Data Sheet (MSDS) for sodium hypochlorite, acute overexposure would result in strong irritation to the eyes, skin, and respiratory tract. Inhalation of fumes may cause pulmonary edema, while ingestion would cause burns to the mouth, digestive tract, and abdominal distress.

Lime: Lime will be delivered in dry quicklime form and will be stored on-site in 50-ton silos. The silos will have a bag house to minimize the emission of fugitive dust particles during the loading process. The dry lime will be conveyed to a slaking chamber where it will be mixed with water to produce lime slurry. The lime slurry will then be transported to a separate mixing/dilution tank. The lime slaking system will produce a 10-18 percent lime slurry. The materials of construction for storage tanks, conveyance systems, piping systems, and all ancillary equipment will be compatible with the recommendation of the lime supplier and in compliance with all applicable City and state regulations. According to the MSDS for lime, this chemical poses an acute threat for skin and respiratory tract irritation and damage to mucous membranes of the upper respiratory tract.

Ferric sulfate: Ferric sulfate or ferric chloride will be used as intake water coagulant. Ferric salts will be delivered and stored in liquid form. The coagulant will be a 70 percent concentration of ferric sulfate or ferric chloride solution. Storage tanks shall be fiberglass-reinforced polyester (FRP) or high-density cross-linked polyethylene (HDXLPE). All piping, pumps, valves, and other handling equipment will be manufactured, lined, and/or coated with Kynar® vinylidene plastic, polyvinyl chloride, rubber, glass, ceramic materials, or other materials specifically manufactured for the intended service. All floors, walls and ancillary equipment subject to splashing would be protected with corrosion-resistant coatings. On-site storage tanks would be placed within an enclosed concrete containment structure with a 110-percent spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals, and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. According to the MSDS for ferric sulfate, acute overexposure would result in irritation to the respiratory system if inhaled, burns, somnolence, diarrhea, tachycardia, shock, acidosis, and hematemesis if ingested, and irritation/corrosion to the eyes.

Polymer: Polymer will be delivered and stored in the form of a dry powder. On average, 100 50-pound bags will be stored. To prepare the polymer for water treatment use, it will be mixed and aged in a batch tank. The polymer system will produce an output concentration of a maximum of 0.5 percent. The materials of construction for storage tanks, pumps, piping systems, and all ancillary equipment will be compatible with the recommendation of the polymer supplier. According to the MSDS for polymer, acute exposure would result in mild eye and skin irritation, while inhalation would cause irritation to the nose, eyes, and throat.

Sulfuric Acid: Sulfuric acid will be delivered and stored in liquid form with a 20 percent concentration. The sulfuric acid will be stored in suitable tanks within an enclosed concrete containment structure with a 110-percent spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals, and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. Storage tanks will manufactured of high-density polyethylene (HDPE). The materials of construction for pumps, piping systems, and all ancillary equipment will be iron, steel, polyvinyl chloride, or Viton for concentrated sulfuric acid, and glass, lead, or rubber for dilute sulfuric acid. According to the MSDS for sulfuric acid, acute overexposure would result in burns to any exposed area such as the eyes, skin, and respiratory tract.

Sodium Bisulfite: Sodium bisulfite will be delivered and stored in liquid form, and contained in suitable tanks within an enclosed concrete containment structure with a 110-percent spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals, and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. The sodium bisulfate will be a 20 percent concentration solution. The materials of construction for storage tanks, pumps, piping systems, and all ancillary equipment will be in accordance with the recommendation of the chemical supplier. According to the MSDS for sodium bisulfite, acute overexposure would result in severe burns and irritation to the skin, eyes, and mucous membranes. Inhalation may cause respiratory discomfort, and ingestion would result in burns to the gastrointestinal system and possibly death.

Ammonia: Ammonia will be delivered and stored in liquid form, and would be stored in a 10,000 gallon tank with a 110-percent spill containment structure. The storage tank will be constructed of high-density polyethylene (HDPE) or fiberglass-reinforced polyester (FRP). All piping, pumps, valves, and other ancillary equipment will be manufactured of materials compatible with the intended service. Generally, polyvinyl chloride (PVC) will be used for low-pressure conveyance piping, and lined Teflon for high-pressure conveyance piping. According to the MSDS for ammonia, acute overexposure would result in burns to the gastrointestinal tract, skin, eyes, mucous membranes, and respiratory tract.

It should also be noted that feed pumps for sodium hypochlorite, ferric, sulfuric acid, and sodium bisulfite will be hydraulically actuated diaphragm-type or peristaltic type chemical metering pumps equipped with a variable frequency drive. The polymer pumps will be single stage, progressive cavity displacement pumps. Lime slurry will be conveyed to the application points with hose type positive displacement pumps.

The project would incorporate numerous leak and spill containment measures to minimize the risk of upset to both on-site employees and surrounding uses. As stated previously, hazardous materials would be utilized for three components of desalination plant operation: 1) periodic cleaning of the RO membranes which filter impurities from seawater; 2) treatment of potable product water; and 3) storage of diesel fuel for emergency backup electricity generators at the off-site underground pump station. All hazardous materials would be stored in concrete containment structures with a 110-percent spill containment capability. If necessary, the inner housing of the

concrete containment structure would be coated for resistance to chemicals, and each structure would be separated or divided from other chemicals to prevent mixing in the case of accidental spillage. All storage tanks would be constructed of appropriate, non-reactive materials, compatible with the recommendations of the supplier of the hazardous material.

In the event of an accidental liquid chemical spill, the chemical would be contained within the concrete containment structure and evacuated through an individual drainage system. The spilled chemical would then be pumped into hazardous waste containment trucks and transported off-site for disposal at an appropriate facility accepting such waste. This operation would be completed by a specialized contractor licensed in hazardous waste handling and disposal. Appropriate agencies, such as the City of Huntington Beach Fire and Police Departments, would also be contacted if necessary. It should also be noted that the existing containment berms along the northern and eastern boundaries of the proposed desalination site would further minimize the potential release of hazardous materials into the adjacent Huntington Beach Channel and wetlands.

The chemical conveyance piping system connecting chemicals from their storage areas to their points of application will be protected from leaks utilizing one of the following leak protection measures:

- Use of piping with double containment walls to prevent potential chemical leaks from reaching the soil or groundwater; and
- Installation of chemical conveyance and feed pipelines in designated plastic or concrete trenches that will contain potential leaks and drain the leaking chemical(s) to a designated containment sump or tank, from where the chemical(s) will be evacuated and disposed of in compliance with all applicable federal, state, and local codes.

On average, one truck per day can be expected to deliver chemicals to the proposed desalination project site, which is considered consistent and compatible with the site's designation as an industrial area. The transportation of hazardous materials to the desalination plant would comply with all Caltrans regulations. The facility would utilize registered haulers to further reduce the potential for accidental release or exposure of these hazardous materials to the environment and individuals during transport.

The desalination plant operator would develop hazardous waste management and safety plans in accordance with City, Occupational Health and Safety Association (OSHA), and United States Environmental Protection Agency (EPA) requirements. In accordance with OSHA regulation 29 CFR 1910.119, operation of the proposed plant would require the preparation of a Process Safety Management Program (PSM), which is designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. This PSM would provide the following preventative components:

- Employee participation plan;
- Process safety information;
- Process hazard analysis;

- Written operating procedures;
- Employee training requirements and written training programs;
- Inspection and maintenance program to document mechanical integrity;
- Preventative maintenance program;
- Contractor training requirements;
- Hot work cutting and welding permit procedures;
- Pre-startup safety review and management of change procedures;
- Compliance audit procedures;
- External emergency/non-emergency notification;
- Facilities training requirements; and
- Reportable quantities of on-site chemicals.

The project would also be in compliance with EPA Risk Management Planning (RMP) Rule 40 CFR 68, which would require the plant operator to register the facility with the EPA prior to on-site storage of hazardous chemicals. For security purposes, the desalination facility would allow site access to authorized personnel only via a secured entry point with a 24-hour guard. Impacts in regards to the long-term operational use, storage, and transport of hazardous materials involved in desalination facility operation are not anticipated to be significant.

Off-Site Diesel Fuel Storage Tank

As stated previously in Section 3.0, *PROJECT DESCRIPTION*, two diesel-powered emergency backup electrical generators would be required for underground pump station implementation. Diesel fuel would be stored within a 7,500-gallon double walled tank with a diameter of eight feet and a height of 26 feet. The City of Irvine Fire Department (which provides service to the booster pump station site) has no preference for either an aboveground or underground storage tank. However, an underground storage tank would be provided since the entire pump station vault would be located below grade, including the diesel generators. The storage tank would be located nearby but separate from the pump station vault and would feature a double-walled containment system with monitoring equipment to prevent and detect leakage. The tank would be contained within the surrounding soil and would supply diesel fuel to the generators (housed within the pump station vault) during power emergencies. Refilling of the tank would occur from the surface via filling ports, similar to the refilling process at a commercial gas station.

The proposed 7,500-gallon diesel fuel storage tank would be placed entirely underground and would be double walled as a preventative measure for leaks and spills. The tank would be buried separate from the underground vault containing the pump station and diesel-fueled emergency back-up electrical generators. In addition, monitoring equipment would be provided to prevent and detect leakage. Because the diesel storage tank would be placed underground and adequate safety measures would be implemented, impacts in regards to the off-site use, storage, and transport of hazardous materials are not anticipated to be significant.

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

The "West" and "North" tank sites are currently developed with fuel oil storage tanks formerly used in conjunction with operation of the Huntington Beach Generating Station. Implementation of the aboveground product water storage tank option is expected to result in similar hazards and hazardous materials impacts in comparison to the proposed project. Optional tank implementation would involve the storage of potable water, lime and ammonia may be stored on either the "West" or "North" tank site. A potential spill of potable water from either tank site is not anticipated to pose an environmental hazard to surrounding uses. In addition, optional tank implementation would remove an existing fuel oil storage tank (the amount of remaining fuel oil in the "West" and "North" tank will not be known until demolition has begun) and would involve the remediation of any soil/groundwater contamination under and surrounding the existing tank prior to construction. As such, impacts in this regard are anticipated to be less than significant.

MITIGATION MEASURES

None required, other than project design implementation of existing regulations and requirements.

UNAVOIDABLE SIGNIFICANT IMPACTS

None have been identified.

4.9 CONSTRUCTION RELATED IMPACTS

The purpose of this section is to discuss the short-term demolition, remediation, and construction related impacts of project implementation upon land uses adjacent to the proposed project site. This section examines possible short-term impacts with regards to hydrology and water quality, air, noise, aesthetics/light & glare, hazards and hazardous materials, and traffic. Information used in this section was obtained from the City of Huntington Beach General Plan (1996), City of Huntington Beach General Plan EIR (1995), the City's "Transportation System Needs Analysis 2000-2010" (September 12, 2000, approved by City Council October 2, 2000), the Biological Constraints Survey for the Poseidon Seawater Desalination Plant Pump Station, Orange County, California (May 16, 2002), Historical/Archaeological Resources Survey Report, Poseidon Seawater Desalination Plant Pump Station Site (June 10, 2002), and the Paleontological Resources Assessment Report, Poseidon Seawater Desalination Plant Pump Station Site (June 10, 2002).

EXISTING CONDITIONS

ON-SITE LAND USES

The approximately seven-acre site is located within the City of Huntington Beach, south of Hamilton Avenue, north of Pacific Coast Highway, east of Newland Street, and west of Magnolia Street. The proposed project site consists of three fuel storage tanks formerly used in conjunction with the Huntington Beach Generating Station, as well as an alternative above-ground storage tank site that is presently occupied by fuel oil tanks. For additional information regarding existing on-site features, refer to Section 3.2, *ENVIRONMENTAL SETTING*, Section 4.1, *LAND USE/RELEVANT PLANNING*, Exhibit 2,*SITE VICINITY MAP*, Exhibit 4, *CONCEPTUAL PIPELINE ALIGNMENTS*, Exhibit 5, *BOOSTER PUMP STATION LOCATION MAP*, and Exhibit 12, *SITE PHOTOGRAPHS*.

ADJACENT LAND USES

Surrounding adjacent land uses include the AES Huntington Beach Generating Station to the southwest, a wetland area to the southeast, the Orange County Flood Control District (OCFCD) flood channel to the east, a fuel oil storage tank to the north, and an electrical switchyard to the west. Additional surrounding land uses include Pacific Coast Highway to the south, the Edison Pipeline and Terminal Company (EPTC) storage tank facility to the east, Ascon/Nesi Landfill to the northeast, commercial, industrial, recreational, and residential uses to the north, and Newland Street, Huntington-By-The-Sea Mobile Home Park, and Cabrillo Mobile Home Park to the west. Uses surrounding the proposed pipeline route are dependent upon the pipeline alignment selected.

DESCRIPTION OF ON-SITE DESALINATION PLANT FACILITY DEMOLITION, REMEDIATION, AND CONSTRUCTION

Tank/Berm Demolition

Implementation of the Poseidon Seawater Desalination Project would begin with demolition of on-site fuel oil/distillate fuel storage tanks and the removal of containment berms surrounding the tanks. A total of three storage tanks exist on-site, two with a diameter of 205 feet and height of 40

feet (the "South" and "East" fuel oil storage tanks) and one with a diameter of 67 feet and a height of 25 feet (distillate fuel tank). The fuel oil tanks consist of a thin, corrugated metal external shell and an internal layer of insulation. The distillate fuel tank is constructed of an external metal shell but lacks insulation. The external metal shells will be collected and sold as scrap. All tanks are seated on either concrete footings or piles, which will also need to be removed as part of the tank demolition process.

It is estimated that the South and East fuel oil tanks contain 200,000 to 350,000 gallons of residual fuel oil remaining from former use associated with the Huntington Beach Generating Station. The distillate tank is estimated to contain 20,000 to 30,000 gallons of distillate fuel. The contents of these tanks will either be transported to an appropriate industrial facility for reuse or disposed of at a suitable disposal site.

Each fuel storage tank is completely surrounded by a 10- to 15-foot high berm utilized to contain any accidental spillage of fuel from the tanks. Implementation of the proposed desalination facility would require the removal of the berms along the southern and western boundaries of the site, as well as the berm separating the "South" tank from the "East"/distillate fuel tanks (it should be noted that the existing northern berm is outside of project boundaries. The berm along the eastern boundary of the site (adjacent to the Huntington Beach Channel) would be left in place. It is estimated that approximately 2,000 cubic yards of soil contained within the berms will be hauled off-site. It should be noted that a City-approved grading plan, grading permit, and haul route would be required prior to any excavation, demolition, remediation, or construction activities. It is estimated that a total of 140 truck trips for 2,000 cubic yards of soil (14 cubic yard trucks) would be required. Refer to Table 4.9-1, *DEMOLITION PROCESS DETAILS*, for more information.

Tank demolition will most likely proceed in the following sequence:

- Removal of residual product in the fuel oil and distillate fuel tanks;
- Clean the interior of the tanks;
- Removal of interior layer of insulation (fuel oil tanks only);
- Dismantling and removal of external metal tank shell;
- Removal of concrete footings or piles; and
- Demolition and removal of containment berms.

The tank demolition phase of the project would result in an approximate total of 460 trips, which include the following:

- 60 trips for the removal of 380,000 gallons of fuel oil and distillate fuel (6,500 gallon trucks loaded at 6,333 gallons per load);
- 20 trips for 20 tons of storage tank insulation (one-ton trucks);
- *100 trips for 100 tons of external storage tank shell material (one-ton trucks); and*
- *140 trips for 2,000 cubic yards of concrete footings or piles (14 cubic yard trucks).*
- 140 trips for 2,000 cubic yards of containment berm soil (14 cubic yard trucks)

Refer to Table 4.9-1, *DEMOLITION PROCESS DETAILS*, below.

Table 4.9-1
DEMOLITION PROCESS DETAILS

Activity / (Estimated Earth Export/Import or Other Material Quantity)	Total Activity Length (months)	Total Number of Truck Loads/ Construction Worker Trips	Maximum Number of One-way Truck Trips per Day
Removal of Residual Fuel Remaining in the Tanks (up to 380,000 gallons)	1	60	30
Removal of Tank Insulation (20 tons of metal)	1	20	8
Removal of External Metal Tank Shell (100 tons of metal)	1.5	100	28
Removal of Concrete Footings or Piles (2,000 CY)	1	140	20
Berms Demolition (2,000 CY)	1	140	40

Site Remediation

Areas surrounding the fuel storage tanks on the existing project site have been found to contain contaminants in exceedance of Regional Water Quality Control Board (RWQCB) thresholds.[1] It will not be known until after storage tank demolition if hydrocarbon contamination exists beneath the storage tanks. Prior to site grading, a Phase II hazardous materials evaluation and Remedial Action Plan (RAP) will be prepared to facilitate on-site remediation. However, such studies can only be prepared subsequent to storage tank demolition. However, it is estimated that site remediation would require a total of 140 truck trips for 2,000 cubic yards of soil (14 cubic yard trucks).

Desalination Plant Construction

Construction of desalination plant facilities within project site boundaries will consist of a pretreatment filter structure, intake pump and pump station installations, reverse osmosis building, numerous pipelines, chemical storage/solids handling building, bulk chemical storage building, electrical substation building, various storage tanks, and an administration building. All buildings and structures on-site will be typical of water or wastewater plants, consisting of cast-in-place concrete and steel construction. All buildings on-site will be Type-II, non-rated. In addition, approximately 1,000 linear feet of pipeline will be installed to connect the desalination plant to the AES Huntington Beach Generating Station intake and outfall facilities. An intake and discharge pipeline will be installed from the southern portion of the subject site in a southerly direction, turning west near the AES acid retention basin, and connecting to the intake and outfall facilities at the AES screen well. Plant construction is anticipated to result in approximately 90 trips for 1,200 cubic yards of soil for initial/final site grading (assuming 14, cubic yard trucks). Refer to Table 4.9-2, *SITE GRADING DETAILS*, for more information.

[1] Huntington Beach Generating Station Phase II Environmental Site Assessment. CH2M Hill, November 29, 1996.

Table 4.9-2
SITE GRADING DETAILS

Activity / (Estimated Earth Export/Import or Other Material Quantity)	Total Activity Length (months)	Total Number of Truck Loads/ Construction Worker Trips	Maximum Number of One-way Truck Trips per Day
Initial Site Grading (800 cubic yards)	2	60	30
Final Site Grading, Paving, and Landscaping (400 cubic yards)	5	30	8

Product Water Tank Excavation/Construction

Approximately 60,000 cubic yards of soil will need to be excavated in order to install an underground product water storage tank on-site. This underground tank is proposed to be implemented within the northern portion of the subject site, underneath the existing South fuel oil storage tank. Since excavation would occur within shallow groundwater, special measures will be necessary to perform a safe installation of the underground storage tank. Utilizing an underground well pumping system, the groundwater table will be reduced to two to five feet below the bottom of the tank for the duration of tank construction. It is assumed that the maximum excavation depth for the storage tank structure will be approximately 42 feet, while maximum well depth would be approximately 75 feet. In general, the excavation process will proceed as follows:

- The underground storage tank site will be excavated in a square pit to groundwater level (a depth of approximately five feet, but varies due to ocean tides and the adjacent flood control channel), inside which well pits 10 to 15 feet wide by 10 to 15 feet long will later be advanced;
- Sheetpiles will be driven around the square pit;
- Well pits will be excavated under water to elevation of approximately 50 to 55 feet below ground surface (BGS), with bracing installed as excavation progresses;
- A wire mesh-wrapped timber frame extending to a depth of 50 to 55 feet BGS will be installed inside the well pits, with weights added to sink the frame;
- The space between the sheetpiles and wire mesh-wrapped timber frame will be backfilled with gravel;
- The well sheetpiles will be removed;
- Drainage pumps will be installed into the well pits and pumping will be initiated; and
- Dewatering will continue until construction of the storage tank is completed.

The length of time the site will be dewatered depends on the velocity of movement of the groundwater and the capacity of the dewatering system. It is anticipated that dewatering would be required for three to eight weeks before excavation would begin and would stay operational for the first 14 to 16 months of product water tank construction.

During dewatering operations the discharge will be directed into a desilting system, such as a baffled tank. Periodic sampling and testing will be conducted to assure compliance with all NPDES regulations. In addition, pumped groundwater flows will be metered, and in the event significant flows occur, the Orange County Water District will be notified (potentially requiring approval) to be assured that there are no adverse impacts on the groundwater basin or seawater intrusion barrier. During the dewatering operation a survey program will be conducted for surrounding property and structures to check for movement or settlement resulting from the dewatering operations. Subsequent to desilting, the underground water will be conveyed to the sanitary sewer system or the AES stormdrain system.

The product water storage tank will also require special structural features to prevent potential movement due to buoyancy caused by shallow groundwater and groundwater fluctuations. The storage tank would utilize cast-in-place construction within the excavated pit. An appropriate amount of ballast will be incorporated into the tank design in order to eliminate buoyancy due to the shallow groundwater. Gravity design features in the form of a heavy mat footing and/or roof system will also be incorporated into tank design. The tank will be surrounded by sheetpiles to further prevent any shifting or movement. Due to the low bearing capacity of the soils beneath the proposed underground storage tank, the storage tank may be constructed on piles, which would be deep enough to reach soils with improved load-bearing capacity. These piles would serve as anchors for the tank structure to further prevent any impacts from buoyancy. The underground storage tank will also be designed to withstand the liquefaction and settlement potentials that exist in the project site vicinity. All plant structures, including the proposed underground product water storage tank, would be designed to maintain structural integrity under 100-year flood hazard conditions.

On-site excavation for underground product water tank implementation is anticipated to require approximately 5,000 truck trips for 60,000 cubic yards of soil (14 cubic yard trucks). Refer to Table 4.9-3, *PRODUCT WATER TANK EXCAVATION DETAILS*, for more information.

Table 4.9-3
PRODUCT WATER TANK EXCAVATION DETAILS

Activity / (Estimated Earth Export/Import or Other Material Quantity)	Total Activity Length (months)	Total Number of Truck Loads/ Construction Worker Trips	Maximum Number of One-way Truck Trips per Day
On-Site Excavation (60,000 cubic yards)	15	5,000	30

DESCRIPTION OF PIPELINE CONSTRUCTION

As stated previously, implementation of the proposed project will require the installation of up to 10 miles of 42- to 48-inch force main to convey water in an easterly direction to its ultimate destination within the City of Costa Mesa, east of State Route 55 (SR-55) at the intersection of Del Mar Avenue and Elden Avenue. The majority of the pipeline alignment will occur within existing public streets, easements, or other rights-of-way (ROW). Although precise pipeline alignments may be modified during final engineering analyses, the conceptual pipeline alignments are shown in Exhibit 4, *CONCEPTUAL PIPELINE ALIGNMENTS.* A detailed description of the pipeline alignment alternatives is included in Appendix G, *PRELIMINARY PIPELINE ASSESSMENT.*

Primary Alignment

The primary, or northern, alignment has a total length of approximately 40,050 feet (7.5 miles). This pipeline alignment would extend in a northerly direction from the AES facility within Newland Street. The pipeline will utililize micro-tunneling or directional boring technology to cross the Orange County Flood Control District's (OCFCD) Huntington Beach Channel, as the bridge crossing the channel lacks the capacity to support the proposed pipeline. The pipeline would then proceed in an easterly direction within Hamilton Avenue from the Newland Street/Hamilton Avenue intersection to the Hamilton Avenue/Brookhurst Street intersection. Along Hamilton Avenue, the pipeline would be either micro-tunneled or directionally bored to cross the Talbert Channel. The pipeline would continue northerly within Brookhurst Street and would proceed in an easterly direction within Adams Avenue. The pipeline would again utilize trenchless methods to cross the Santa Ana River and Greenville-Banning Channel, as the Adams Avenue bridge is not capable of supporting a 42- to 48-inch pipe. The alignment would then proceed in a southerly direction within Placentia Avenue to the Costa Mesa Country Club, at which point the route would proceed east along the northern boundary (utilizing off-pavement, open trenching methods) of the property to Harbor Boulevard. The pipeline would then proceed along the eastern boundary of the Fairview State Hospital to the Harbor Boulevard/Fair Drive intersection, again using off-pavement, open trenching methods. The alignment would then cross Harbor Boulevard (most likely utilizing trenchless methods) and proceed easterly within Fair Drive. Routing the pipeline on the northern side of Fair Drive would permit the construction of the line off-pavement once the Orange County Fairgrounds is reached. East of the fairgrounds, the pipeline would pass under the SR-55 freeway utilizing trenchless construction until it ultimately terminates at OC-44, located at the intersection of Del Mar Avenue and Elden Avenue. Refer to Table 4.9-4, *PIPELINE ALIGNMENT DETAILS*.

It should be noted that the segment of Brookhurst Street, between Adams Avenue and Atlanta Avenue, has been resurfaced within the past 18 months. In addition, the portion of Brookhurst Street between Atlanta Avenue and Hamilton Avenue was resurfaced as of June, 2002. Therefore, should the primary alignment be implemented, open trenching of this street would require the resurfacing of one half of Brookhurst Street between Hamilton Avenue and Adams Avenue.

Alternative Alignment

The alternative alignment would follow a path located south of the primary alignment. This route would rely entirely on the implementation of the pipeline within public easements, through the Cities of Huntington Beach and Costa Mesa. The total distance for this route would be approximately 30,000 feet (5.7 miles). This pipeline would follow the same route as the primary alignment until the intersection of Hamilton Avenue and Brookhurst Street. At this point, the pipeline will continue eastward within Victoria Street and will utilize trenchless methods to cross under the Santa Ana River and Greenville-Banning Channel. Trenchless construction will also be necessary to cross Harbor Boulevard and the SR-55 along Victoria Street. After crossing SR-55, the pipeline will continue for a short distance along 22nd Street and will proceed northeast to its termination point at OC-44, located at the intersection of Del Mar Avenue and Elden Avenue. Refer to Table 4.9-4, *PIPELINE ALIGNMENT DETAILS*.

Table 4.9-4
PIPELINE ALIGNMENT DETAILS

Route	Off Pavement (ft.)	Under Pavement (ft.)	Number of Trenchless Constructions
Primary Alignment	10,700	29,350	6
Alternative Alignment	0	30,000	6

As stated above, the pipeline alignment will require trenchless construction to cross waterways and roadways with a high sensitivity to traffic disturbance. The two methods under consideration are micro-tunneling or directional boring. Generally, micro-tunneling involves the excavation of two jacking and receiving pits, which are vertical excavations with shoring and bracing systems (one on each side of the waterway or roadway to be crossed). A micro-tunneling machine, equipped with either an auger or slurry material removing device, is lowered into the jacking pit and creates a tunnel connecting the jacking and receiving pits. The pipeline can then be installed within the underground tunnel.

Horizontal directional drilling involves the drilling of a pilot hole at a prescribed angle from one end of the waterway/roadway to be crossed to the other utilizing a pilot drill string. Once the pilot hole is complete, the hole must be enlarged to a suitable diameter for the pipeline. This is accomplished by "pre-reaming" the hole to an appropriate diameter. A reamer is attached to the drill string and is pulled through the pilot hole by a drilling rig. Large quantities of slurry are pumped into the hole to maintain the integrity of the hole and to flush out cuttings. Once the drilled hole is enlarged, the pipeline is prefabricated, a reamer is once again attached to the drill string, and the pipeline is connected behind the reamer via a swivel. The drilling rig then pulls the reamer and pipeline through the tunnel until surfacing at the opposite end, once again circulating high volumes of drilling slurry.

For lengths of the pipeline not utilizing trenchless construction (the majority of the pipeline), open trench construction techniques would be utilized. For open trenching, the minimum coverage for a 42- to 48-inch pipe would be at least five to six feet with two feet of available workspace on both sides of the pipe. This would require deep trenches (approximately nine to 10 feet) with appropriate shoring. The required size of any access construction pit would be a minimum of 20 feet by 30 feet and 15 feet by 15 feet for receiving pits. Dewatering operations may be necessary, especially in areas close to the Pacific Ocean within the City of Huntington Beach. Including required lay-down area for supplies and equipment, a 30-foot easement may be required for trenching operations. Refer to Table 4.9-5, *PIPELINE CONSTRUCTION DETAILS*, for more information.

Table 4.9-5
PIPELINE CONSTRUCTION DETAILS

Activity / (Estimated Earth Export/Import or Other Material Quantity)	Total Activity Length (months)	Total Number of Truck Loads/ Construction Worker Trips	Maximum Number of One-way Truck Trips per Day
Crossing of Flood Control Channel at Newland (1,200 CY)	4	90	12
Crossing of Talbert Drainage Channel (1,200 CY)	3	90	12
Removal of 30-inch OCWD Pipe (10 tons of pipe)	1.5	10	8
Soil Remediation (1,600 CY)	2	115	16
Crossing Santa Ana River and Greenville-Banning (2,400 CY)	2	180	20
Crossing Harbor Boulevard @ Fair (1,200 CY)	3	90	12
Crossing 55 Freeway (1,200 CY)	3	90	12

DESCRIPTION OF OFF-SITE UNDERGROUND PUMP STATION CONSTRUCTION

The off-site construction of an underground booster pump station will be required as part of the seawater desalination plant project in order to convey potable water from the subject site to southern Orange County. The pump station is proposed to be located entirely underground within an unincorporated area of the County of Orange, along the eastern border of the City of Newport Beach, approximately 1.5 miles south of the University of California, Irvine. The site is within the Orange County Resource Preservation Easement, approximately 0.25 miles north of the San Joaquin Reservoir, where the East Orange County Feeder Number Two and the OC-44 transmission pipelines converge (the proposed underground pump station would connect to the OC-44 pipeline). The pump will be electrically powered and will be placed within an underground vault so as to avoid noise and aesthetic impacts to surrounding uses, which include residential and open space uses.

The footprint of the proposed underground pump station would be approximately 80 feet wide by 90 feet long by 40 feet deep, and would include space for the pump station with wet well below in addition to separate rooms for the electrical generator and diesel-powered emergency backup generator. It is anticipated that the underground pump station would require the import or export of approximately 17,400 cubic yards of earthen material, requiring approximately 1,240 truck trips (14 cubic yard trucks). Refer to Table 4.9-6, *BOOSTER PUMP STATION CONSTRUCTION DETAILS*, for more information. The construction process for the proposed underground booster pump station is expected to last approximately 18 months.

Table 4.9-6
BOOSTER PUMP STATION CONSTRUCTION DETAILS

Activity / (Estimated Earth Export/Import or Other Material Quantity)	Total Activity Length (months)	Total Number of Truck Loads/ Construction Worker Trips	Maximum Number of One-way Truck Trips per Day
Initial Site Grading (400 CY)	1	30	8
Site Excavation (16,000 CY)	3	1,240	40
Site Final Grading and paving and Landscaping (1,000 CY)	3	70	20

Construction of the proposed off-site underground booster pump station within an unincorporated area of the County of Orange may have impacts in regards to biological and cultural resources. The proposed pump station site is approximately 0.5 acres in size and is undeveloped and currently overgrown with dense native vegetation. The site is situated within a County-designated Resource Preservation Easement designated as a Natural Community Conservation Plan (NCCP) area. While development restrictions exist for the Easement, the underground pump station would be sited in an area where underground facilities are allowed (two underground pump stations exist adjacent to the proposed pump station site). Existing conditions for biological and cultural resources are described below.

Biological Resources

Vegetation

The booster pump station site exists with dense riparian and upland vegetation types on-site. Riparian vegetation types on-site include mule fat scrub, willow scrub, freshwater marsh, and open water. Riparian species on-site include the following:

- mule fat (*Baccharis salicifolia*);
- arroyo willow (*Salix lasiolepis*);
- Fremont cottonwood (*Populus fremontii*);
- cattail (*Typha* sp.);
- reeds (*Scirpus* spp.);
- wild celery (*Apiastrum angusifolium*);
- western ragweed (*Ambrosia psilotachya*);
- prickly sow thistle (*Sonchus asper*); and
- pampas grass (*Cortaderia selloana).*

Upland vegetation types on-site include coastal sage scrub, California annual grassland, ruderal, ornamental, and developed. Upland species on-site include the following:

- California sunflower (*Encelia californica*);
- California sagebrush (*Artemisia californica*);
- coyote brush (*Baccharis pilularis*);
- black sage (*Salvia mellifera*);

- white sage (*Salvia apiana*);
- monkey flower (*Mimulus aurantiacus*);
- poison oak (*Toxicodendron diversilobum*);
- deer weed (*Lotus scoparius*);
- Mexican elderberry (*Sambucus mexicana*);
- lemonadeberry (*Rhus integrifolia*);
- coast prickly pear (*Opuntia littoralis*);
- California buckwheat (*Eriogonum fasciculatum*),
- California everlasting (*Gnaphalium californicum*);
- golden yarrow (*Eriophyllum confertiflorum*);
- black mustard (*Brassica nigra*);
- telegraph weed (*Heterotheca grandiflora*);
- tocalote (*Centaurea melitensis*);
- non-native grasses (*Avena* and *Bromus* spp.);
- gum trees (*Eucalyptus* spp.); and
- fan palm (*Washingtonia filifera*).

Wildlife

Vegetation types within the boundaries of the proposed booster pump station site provide moderate to high quality habitat for native wildlife species, including birds, amphibians, reptiles, mammals, and fish. Species either observed or expected to occur on-site include the following:

- red-tailed hawk (*Buteo jamaicensis*);
- Cooper's hawk (*Accipiter cooperi*);
- red-shouldered hawk (*Buteo lineatus*);
- mourning dove (*Zenaida macroura*);
- California quail (*Callipepla californica*);
- American crow (*Corvus brachyrhynchos*);
- house finch (*Carpodacus mexicanus*);
- northern mockingbird (*Mimus polyglottos*);
- California thrasher (*Toxostoma redivivum*);
- common yellowthroat (*Geothlypis trichas*);
- coastal California gnatchatcher (*Polioptila californica californica*);
- least Bell's vireo (*Vireo bellii bellii*);
- tree frog (*Hyla regilla*);
- African clawed frog (*Xenopus laevis*);
- western rattlesnake (*Crotalus viridis*);
- gopher snake (*Pituophis melanoleucus*);
- western fence lizard (*Sceloporus occidentalis*);
- side-blotched lizard (*Uta stansburiana*);
- alligator lizard (*Elgaria multicarinata*);
- San Diego horned lizard (*Phrynosoma coronatum blainvillei*);
- northern red-diamond rattlesnake (*Crotalus ruber ruber*);
- southwestern pond turtle (*Clemmys marmorata pallida*);
- opossum (*Didelphis virginianus*);
- house mouse (*Mus musculus*);
- coyote (*Canis latrans*);
- raccoon (*Procyon lotor*); and
- mosquito fish (*Gambusia* sp.).

Special Status Habitat

Special status habitats are considered to be "depleted" by the California Department of Fish and Game (CDFG) and the County of Orange. Two special status habitats occur on or in the immediate vicinity of the subject site: riparian habitat (including mule fat scrub, willow scrub, freshwater marsh, and open water) and coastal sage scrub. In addition, riparian habitats may include wetlands, drainages, and "waters of the United States" which are protected under the jurisdiction of the U.S. Army Corps of Engineers and/or CDFG. It should also be noted that the pump station site is situated within a Natural Community Conservation Planning (NCCP) region, and the underground pump station would be subject to regulations as administered by the CDFG.

Special Status Plant and Wildlife Species

No federal- or state-listed threatened or endangered plant species are expected to occur within the boundaries of the proposed pump station site. However, several federal- and/or state-listed threatened or endangered wildlife species are known to occur in the subject site region, some of which are expected to occur on or in the immediate vicinity of the subject site. These include the coastal California gnatcatcher (federally-listed Threatened and state-listed Species of Special Concern), least Bell's vireo (federally- and state-listed Endangered), and southwestern pond turtle (federally-listed Species of Concern and state-listed Species of Special Concern). It should also be noted that the area also has the potential to support raptor nesting habitat. A well-established red-tailed hawk nest was observed approximately 450 feet south of the subject site in a large gum tree.

For a detailed discussion of existing biological resources within and surrounding the proposed booster pump station site, refer to Appendix L, *BOOSTER PUMP STATION BIOLOGICAL CONSTRAINTS SURVEY.*

Cultural Resources

Historical/Archaeological Resources

No historical or archaeological resources are known to exist within the boundaries of the proposed booster pump station site. A total of 22 prehistoric archaeological sites are known to exist within a 0.5-mile radius of the subject site (none within or adjacent to the subject site), with eight having eligibility for listing in the National Register of Historic Places. In addition, historic maps indicate that the subject site vicinity appears to be low in sensitivity for historic resources. No buildings, structures, objects, sites, features, or artifacts over 50 years of age exist on-site.

Paleontological Resources

No paleontological localities have been discovered within the boundaries of the proposed booster pump station site or within a one-mile radius. However, some localities have been found elsewhere in the same sedimentary units as those found on the subject site. Because the site is part of the Topanga Formation (containing sediments deposited during the middle Miocene period, highly sensitive for marine invertebrate and vertebrate fossils), there is potential for disturbance of fossil remains during earth-moving operations. No fossil remains are known to exist on the ground surface on or surrounding the subject site.

For a detailed discussion of existing cultural resources within and surrounding the proposed booster pump station site, refer to Appendix M, *CULTURAL RESOURCES ASSESSMENT REPORTS*.

PROJECT PHASING

The demolition, remediation, and construction process of the proposed project would last approximately 24 months, including time necessary to acquire all required agreements, permits, and approvals. Project phasing would be divided into three separate categories, composed of the following activities described above:

- **On-Site Desalination Facility Construction:** This portion of the proposed project would last approximately 24 months, and would include such activities as on-site demolition, grading/excavation, construction of desalination facilities, landscaping, and facility startup/testing. Import and export of earthen materials would occur primarily during the first six months and last four months of this phase of the project.

- **Off-Site Product Water Transmission Pipeline Construction:** This portion of the project would last approximately 21 months, and would start about three months after the beginning of on-site desalination facility construction. This phase would include such activities as pipeline installation, implementation of pipeline under waterways/major roadways, soil remediation, removal of pipeline, and facility startup/testing. Import and export of earthen materials would occur primarily during the middle 12 months of this phase.

- **Off-Site Product Water Underground Booster Pump Station Construction:** This phase of the proposed project would last approximately 18 months, and would begin approximately six months subsequent to the commencement of on-site desalination facility construction. This portion of the project would include such activities as grading/excavation/paving, pump station construction, emergency power generator construction, landscaping, and facility startup/testing. Import and export of materials would occur mainly within the first six months and final six months of the phase.

It should be noted that it is anticipated that all three phases would be implemented concurrently for the final 18 months of the proposed project.

IMPACTS

HYDROLOGY AND WATER QUALITY

Excavation, grading, and backfilling associated with project implementation is anticipated to generate erosive conditions that may include sediment laden storm run-off or dust. In addition, the construction process for the on-site underground product water storage tank will require substantial dewatering due to shallow groundwater conditions beneath the subject site. Pursuant to Appendix G of the Drainage Area Management Plan (DAMP) by the Orange County Stormwater Management Program, a National Pollution Discharge Elimination System (NPDES) Permit must be obtained from the Santa Ana Regional Water Quality Control Board (SARWQCB) for the demolition, remediation, and construction process. As part of the NPDES process, the project would also comply with the State of California general permit (including the submittal of a Notice

of Intent to the SARWQCB) and would include the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will outline the source control and/or treatment control BMPs that would avoid or mitigate ruoff pollutants at the construction site to the "maximum extent practicable". An additional NPDES permit specifically for the dewatering process necessary for underground product water tank implementation will also be required. Implementation of best management practices (BMPs) as found in the Orange County NPDES Stormwater Program Drainage Area Management Plan (DAMP) and the Standard Specifications for Public Works Construction "Greenbook" which include such measures as use of sand bags and temporary dam building may be applied to sufficiently reduce sediment laden storm run-off. Additionally, area watering and limiting excavation, backfilling and grading activities to non-windy days will sufficiently control the amount of particulate matter that may migrate off-site. Therefore, this is not considered a significant impact with mitigation.

In addition, dewatering activities for underground product water tank excavation are not anticipated to have significant impacts in regards to hydrology and water quality. As stated previously, dewatering discharge will be directed to a desilting system, and would be sampled and tested periodically to ensure compliance with all NPDES regulations. Should contaminated groundwater be encountered, a remediation contractor would remediate the groundwater prior to discharge into the sanitary sewer system or AES storm water system. The dewatering process will be a temporary procedure and would have no long-term impacts on groundwater quality in the project site vicinity. As no potable water supply or extraction wells exist within the vicinity of the subject site, no impacts to the potable groundwater supply would occur. Groundwater conditions would return to existing levels subsequent to the dewatering process, and no adverse impacts on the groundwater basin or seawater intrusion barrier are expected.

AIR QUALITY

The SCAQMD *CEQA Air Quality Handbook* provides significance thresholds for construction emissions within the SCAQMD jurisdictional boundaries (refer to Table 4.9-7, *CONSTRUCTION EMISSIONS THRESHOLDS*). Projects in the SoCAB with daily or quarterly thresholds which exceed any of the emission thresholds should be considered significant.

Table 4.9-7
CONSTRUCTION EMISSIONS THRESHOLDS

Pollutant	Construction Emissions Threshold	
	Quarterly	Daily
Reactive Organic Compounds	2.5 tons	75 pounds
Nitrogen Oxides	2.5 tons	100 pounds
Carbon Monoxide	24.75 tons	550 pounds
Fine Particulate Matter	6.75 tons	150 pounds
Sulfur Oxides	2.5 tons	150 pounds

Less than significant, short-term impacts on air quality would occur during the construction process required to implement the proposed project. These temporary impacts would include:

- *Particulate (fugitive dust) emissions from remediation, construction, grading and clearing activities on-site;*
- Exhaust emissions and potential odors from the construction equipment used on-site as well as the vehicles used to transport materials to and from the site; and
- Exhaust emissions from the motor vehicles of the construction crew.

Fugitive Dust Emissions

Construction operations associated with implementing the proposed project would generate fugitive dust emissions. Fugitive dust may be a nuisance to those living and working in the project vicinity and along the proposed pipeline alignment. The primary sources of construction-related dust emissions would be demolition and grading operations, excavation operations, building construction, pipeline construction, and remediation activities.

Fugitive dust from demolition, remediation, grading and construction is expected to be short-term and would cease following project completion. Most of this material is inert silicates, rather than the complex organic particulates released from combustion sources, which are more harmful to health. Dust (larger than 10 microns) generated by such activities usually becomes more of a local nuisance than a serious health problem. The amount of PM_{10} (particulate matter smaller than 10 microns) generated as a part of fugitive dust emissions is of particular concern to health. As previously discussed, PM_{10} poses a serious health hazard, alone or in combination with other pollutants. The URBEMIS7G computer model calculates PM_{10} fugitive dust as part of the project's emissions. As shown in Table 4.9-8, *DAILY DEMOLITION, REMEDIATION, AND CONSTRUCTION EMISSIONS*, the project would not exceed the established SCAQMD PM_{10} threshold, with implementation of recommended mitigation measures (making a conservative assumption that up to 2.5 acres would be under disturbance at any one time).

Construction Grading and Hauling. The construction phase of the proposed project would involve grading and hauling. The proposed project will require substantial amounts of excavation and recompaction in order to create a surface suitable for project implementation, and would require exporting/importing of fill material. Although these activities will create additional dust and PM_{10} (as well as other related truck emissions), it would be mitigated to less than significant levels through implementation of standard dust control practices required as part of the grading permit (periodic site watering, covering laden trucks with tarps, and periodic street sweeping).

Demolition, Remediation, and Construction Equipment Emissions

In addition to impacts resulting from dust generation, demolition, remediation, and construction equipment exhaust resulting from desalination plant, transmission pipeline, and underground booster pump station implementation would also contribute to short-term air quality impacts. Primary sources of short-term ROG and NO_x emissions are gasoline and diesel-powered heavy-duty mobile construction equipment. The majority of the equipment used today is diesel-powered (approximately 90 percent of the heavy construction machinery), which tends to be more efficient than gasoline-powered equipment, producing lower CO and hydrocarbon emissions. However, diesel engines emit much higher amounts of NO_x, SO_x, and particulates per hour of activity.

Exhaust from heavy-duty equipment is difficult to quantify because of the day-to-day variability in construction activities and equipment used. Model defaults from the URBEMIS7G computer model were used to quantify short-term emissions from construction equipment for the project, and are

shown in Table 4.9-8, *DAILY DEMOLITION, REMEDIATION, AND CONSTRUCTION EMISSIONS*. As shown in these tables, project remediation and construction would exceed the SCAQMD emissions thresholds for ROG, NO_x, and CO. The short-term remediation/construction process would not violate thresholds for PM_{10} levels. Short-term impacts in regards to ROG, NO_x, and CO are considered an unavoidable significant impact.

Table 4.9-8
DAILY DEMOLITION, REMEDIATION, AND CONSTRUCTION EMISSIONS

Pollutant	Total Project Emissions	SCAQMD Thresholds (lbs/day)	Threshold Exceeded? Yes/No
Carbon Monoxide (CO)	1,233.37	550	**Yes**
Reactive Organic Gases (ROG)	150.0	55	**Yes**
Nitrogen Oxides (NOx)	1,350.1	55	**Yes**
Fine Particulate Matter (PM_{10})	122.4	150	No

- Emissions calculated using the URBEMIS7G Computer Model as recommended by the SCAQMD.
- Calculations include emissions from numerous sources including: site grading, construction worker trips, stationary equipment, diesel mobile equipment, truck trips, and asphalt off-gassing.
- Refer to Appendix B, *AIR QUALITY DATA*, for assumptions used in this analysis, including quantified emissions reduction by mitigation measures.

It should be noted that the majority of short-term pollutant emissions associated with project implementation result from the hauling of materials off-site. The remediation and demolition process would require a substantial amount of truck hauling to remove soils, demolished tank materials, and residual fuel from the subject site. It is anticipated that a total of approximately 100,000 cubic yards of material would require off-site transport. However, pollutant emissions from vehicles hauling material from the site would be dispersed over a large geographical area and would be short-term in nature. A truck hauling route shall be developed for the proposed project, utilizing a route that is least disruptive to sensitive receptors, preferably Newland Street to Pacific Coast Highway to Beach Boulevard to I-405.

NOISE

The proposed project would involve the remediation and demolition of existing fuel oil storage tanks, the construction of the proposed seawater desalination project, the installation of up to ten miles of pipeline within primarily within existing public streets, easements, or other rights -of-way (ROW), and the implementation of an off-site underground booster pump station. The demolition, remediation, and construction process of the proposed project would last approximately 24 months. Project phasing would be divided into three separate categories, composed of: 1) on-site desalination facility construction (lasting approximately 24 months); 2) off-site product water transmission pipeline construction (lasting approximately 21 months, beginning about three months after the commencement of on-site desalination facility construction); and 3) off-site product water underground booster pump station construction (lasting approximately 18 months, beginning about 6 months after the start of construction for the on-site desalination facility). During the project implementation process, adjacent sensitive receptors would be exposed to sporadic high noise levels and groundborne vibration associated with remediation, demolition and construction activities (as a result of power tools, jack-hammers, truck trips, pile-drivers, etc.).

As stated above, sensitive receptorsexist in the subject site vicinity, the nearest being residential uses approximately 1,000 feet west of the subject site. These sensitive receptors are located within a primarily industrial area, and are typically exposed to noise generated by the AES Huntington Beach Generating Station, industrial uses along Edison Avenue, and high levels of automobile traffic along Beach Boulevard, Pacific Coast Highway, and Magnolia Street. Various sensitive receptors exist along the two alternative pipeline alignments, including residential areas, open space/recreational uses, medical facilities and schools. Open space and residential uses are located adjacent to the proposed off-site underground pump station location within unincorporated County of Orange territory. The more intense remediation, demolition, and construction noise (including the driving of sheet piles) would occur for brief periods of typically two to four weeks, and all construction-related noise would comply with applicable City standards. In addition, the proposed project would require off-site import/export of soils as part of the site grading process. Any off-site truck traffic associated with desalination project implementation would utilize the existing access road located off of Newland Street. All truck traffic, including traffic associated with pipeline implementation, would be subject to a truck and construction vehicle routing plan and would comply with all City noise regulations. Given this information, a temporary increase in noise and groundborne vibration from remediation, demolition, and construction is expected to be less than significant with implementation of standard construction practices.

PUBLIC SERVICES AND UTILITIES

The demolition, remediation, and construction process for implementation of both on- and off-site components of the proposed project is not anticipated to result in impacts to public services. However, the proposed project (especially the installation of product water pipeline) may impact utilities in regards to damage or disruption of underground facilities such as water/sewer pipelines, electrical conduits, underground cable television or telephone wiring, and natural gas mains. On- and off-site grading and excavation would occur only after the project engineer has identified the locations of underground utilities.

Should implementation of the product water pipeline conflict with existing subsurface utilities such as sewer or storm water gravity systems, either the proposed pipeline or existing utility would be rerouted. It should be noted that although the new Effingham sewer lift station is located along the Alternative Pipeline Alignment, pipeline construction would avoid this facility and disruption of service would not occur. In the event that a gravity line or other utility cannot be rerouted, the 42- to 48-inch transmission line would be installed either above or below the existing utility (since the water flowing through the proposed pipeline would be under pressure, routing the line under the utility would not affect its operation). In those cases where a gravity line or other existing utility can be rerouted, the utility would be routed underneath the proposed pipeline, if possible. Gravity lines would be fitted with a siphon section to allow flow to continue uninterrupted during proposed pipeline implementation. The proposed water transmission pipeline would have adequate sanitary separation from sewer facilities, and, if necessary, the Applicant would obtain necessary permits/approvals from the Department of Health Services (DHS) for portions of the pipeline in restricted zones. Impacts in this regard are not anticipated to be significant.

In addition, the project would require trenchless construction beneath the Huntington Beach Channel as part of the product water pipeline portion of the project. The County of Orange has proposed improvements to this channel which would involve the driving of sheet piles 24 feet below ground. However, the Orange County Flood Control District (OCFCD) has indicated that

improvements to the channel would not interfere with pipeline implementation.[2] Impacts in this regard are anticipated to be less significant.

AESTHETICS/LIGHT & GLARE

Demolition, remediation, and construction debris, associated mechanical equipment and high levels of truck traffic may adversely impact views of and across the project site, including the pipeline alignment and underground pump station locations. Construction and remediation activities on the proposed desalination project site would be visible from Huntington-By-The-Sea Mobile Home Park (located to the west), Beach Boulevard (located to the west), limited locations along Hamilton Avenue (located to the north), limited locations along Huntington State and Huntington City Beaches (located to the south), and from the vicinity of the intersection of Magnolia Street and Pacific Coast Highway (located to the southeast). However, these impacts would not be considered significant, as they would be short-term in nature. Standard construction measures such as chain link fencing and nylon mesh would be utilized to screen the staging and construction areas from site visitors and the general public at the proposed desalination project site. In addition, a staging area for equipment associated with the demolition, remediation, and construction process would be situated within AES property boundaries.

HAZARDS AND HAZARDOUS MATERIALS

The short-term demolition, remediation, and construction process of the proposed project may have adverse impacts with regards to hazardous materials. Remediation activities could expose on-site workers, future project employees, and the adjacent community to a variety of potentially hazardous materials. However, site remediation activities are strictly controlled by local, state, and federal requirements, and the majority of contamination in the vicinity of the proposed desalination project site is petroleum-based (which is not considered "toxic" or acutely hazardous). In addition, contaminated soils may be encountered along the proposed pipeline alignment (especially in the vicinity of the proposed desalination facility) as well as on the proposed pump station site. Therefore, compliance with the required mitigation measures (including a Remedial Action Plan subject to County approval prior to project implementation for contaminated areas) is expected to reduce potential impacts to less than significant levels.

Implementation of the water transmission pipeline portion of the project may create potential impacts due to landfill gas generation (particularly methane) from the former Cannery Street Landfill, located at the northwestern corner of Hamilton Avenue and Magnolia Street (currently developed as Edison Community Center/SCE easement). Both pipeline alignment alternatives would pass directly south of the former landfill within Hamilton Avenue. However, pipeline construction in the vicinity of the former Cannery Street landfill would comply with all local, state, and federal regulations in regards to landfill gas. Standard construction practices will be implemented to determine the potential for landfill gas and, if deemed necessary, an appropriate gas detection, venting, and/or barrier system will be implemented to reduce impacts to less than significant levels.

In addition, potential groundwater contamination beneath the subject site may pose a short-term health threat to on-site workers and adjacent land uses during dewatering operations. Groundwater pumped from the project site would be continually monitored for pollutants, and if

[2] Poseidon Resources Corporation, May 1, 2002.

detected, would be treated prior to discharge to the sanitary sewer system or stormwater facilities. As dewatering operations would meet all federal, State and local criteria for groundwater contaminants, impacts in this regard would be less than significant.

In addition, demolition of existing on-site fuel oil storage tanks may expose persons to asbestos containing materials (ACMs) and/or lead based paint. Existing tanks on-site are constructed with a layer of insulation potentially containing asbestos. The proposed project is not expected to present significant health hazards, as carefully controlled removal operations will comply with all applicable Federal, State, and County regulations, in addition to measures imposed by the City of Huntington Beach and local agencies. Should asbestos or lead based paint be discovered on-site, a licensed asbestos/lead abatement contractor will be retained to remove the hazardous materials prior to the demolition of any structures. All ACMs would be removed in accordance with SCAQMD Rule 1403. No structures will be demolished along the pipeline alignment, as the pipeline alignment will occur within existing public streets, easements, or other rights-of-way (ROW). In addition, the proposed booster pump location site is void of structures, thereby eliminating the possibility of asbestos insulation or lead based paint on-site. Impacts are not anticipated to be significant.

TRAFFIC

Implementation of the proposed project may cause short-term, construction-related traffic impacts. The demolition, remediation and construction process will generate traffic in the site vicinity through on-site construction worker vehicle trips and truck trips. However, the City of Huntington Beach's recently adopted "Transportation System Needs Analysis 2000-2010" (September 12, 2000, approved by City Council October 2, 2000) indicates that no existing deficient street segments (LOS D or worse) surround the subject site. The nearest deficient segment is located along Pacific Coast Highway (PCH), between Beach Boulevard and Huntington Street, to the west of the proposed desalination project site. The truck trips to and from the project site will utilize Beach Boulevard to PCH to Newland Street, thereby minimizing impacts to the deficient segment of PCH located west of the project site. As the truck route would utilize Beach Boulevard from PCH north to the I-405 freeway, the portion of Beach Boulevard from Garfield Avenue to Ellis Avenue (also designated as deficient by the City's "Transportation System Needs Analysis 2000-2010") may be temporarily impacted by short-term demolition, remediation, and construction. However, a Traffic Management Plan will be prepared for the demolition, remediation and construction phases of the proposed project in order to mitigate these short-term impacts to less than significant levels.

Pipeline construction for product water delivery will require temporary disruption along public streets, as the majority of the pipeline is proposed to be installed within existing street right-of-way (ROW) utilizing open trench construction methods. Trenchless construction methods will be utilized to cross roadways sensitive to traffic disruption, such as Brookhurst Street and SR-55. Adequate staging areas will be provided for both open trench and trenchless construction in order to minimize the amount of traffic disruption. In addition, a Traffic Management Plan will be prepared for the pipeline implementation phase of the proposed project in order to mitigate impacts to less than significant levels. The Traffic Management Plan will include measures to minimize traffic impacts due to pipeline implementation, such as the use of plating to reopen travel lanes during peak traffic hours as well as maintaining access to businesses and residences.

In addition, a new pipeline will be necessary to connect existing AES Huntington Beach Generating Station intake and outfall facilities to the proposed desalination project. It is not anticipated that the pipeline will require the relocation of structures, utilities, or other AES facilities. The pipeline

connecting AES facilities to the proposed desalination project will exist entirely within AES property boundaries, and will not affect public roadways. Pipeline construction will be short-term in nature, and appropriate mitigation measures will be implemented to reduce impacts on the AES Generating Station to less than significant levels, including provision of temporary parking areas.

Traffic impacts are not anticipated to occur upon implementation of the underground booster pump station, as the pump station site is proposed to occur within an Orange County Resource Preservation Easement, and no roadways exist adjacent to the site.

BIOLOGICAL RESOURCES

As stated previously, implementation of the proposed off-site underground booster pump station may have impacts on biological resources, as the 0.5-acre site is overgrown with dense native vegetation known to support numerous species of wildlife. Pump station implementation may impact two special status habitats (riparian and coastal sage scrub) on-site and may adversely affect several federal- or state-listed species (coastal California gnatcatcher, least Bell's vireo, and western pond turtle) expected to occur within the immediate vicinity of the subject site.

However, prior to construction, three coastal California gnatcatcher surveys would be performed for the subject site (preferably during the gnatcatcher breeding season) in accordance with the United States Fish and Wildlife Service (USFWS) and CDFG regulations for development within a NCCP region. If the gnatcatcher is detected on or adjacent to the site, consultation and permitting through the USFWS would be required.

In addition, a focused survey utilizing USFWS protocols for the least Bell's vireo would be performed prior to pump station implementation. This protocol requires that eight surveys be conducted at least 10 days apart during the vireo nesting season of April through July. If this species is found to occur on or adjacent to the subject site, consultation and permitting through the USFWS would be necessary. If construction can avoid the nesting season, this survey may not be required.

As pump station implementation may also impact the southwestern pond turtle, a habitat assessment conducted by a qualified biologist experienced with the species would be performed. If adequate habitat is observed, a trapping program may be required to determine the presence or absence of this species. If present, the pond turtles will be trapped and relocated prior to construction to mitigate impacts to this species to less than significant levels.

A survey for active raptor nests will be conducted 30 days prior to commencement of any construction activities during the raptor breeding season between February 1 and June 30. Any occupied nests found during survey efforts would be mapped on construction plans. Restrictions on construction activities may be required in the vicinity of the nest until the nest is no longer active as determined by a qualified biologist.

As the proposed underground pump station would include all necessary biological surveys and comply with standard regulations as required by the USFWS and CDFG, impacts to biological resources are not anticipated to be significant (refer to Appendix L, *BOOSTER PUMP STATION BIOLOGICAL CONSTRAINTS SURVEY*, for additional information). It should also be noted that any displaced vegetation would be replaced.

CULTURAL RESOURCES

As no historical or archaeological resources are known to exist within or surrounding the proposed booster pump station site, impacts are not anticipated to be significant in this regard. However, should buried historical/archaeological resources be discovered during construction, all work in that area will be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

As the subject site is underlain by sediments deposited during the middle Miocene period, there is a high potential for the existence of middle Miocene invertebrate fossils and lower potential for middle Miocene vertebrate and Pleistocene vertebrate/invertebrate fossils. As such, a paleontological resource recovery program for Miocene invertebrate fossils will be performed for proposed underground pump station implementation. Earth-moving activities excavating lower than five feet will be monitored for paleontological resources, and a program to mitigate potential impacts to paleontological resources if exposed or unearthed during excavations will also apply (in accordance with the proposed guidelines of the Society of Vertebrate Paleontology). With the implementation of recommended mitigation measures, impacts to paleontological resources are not expected to be significant (refer to Appendix M, *CULTURAL RESOURCE ASSESSMENT REPORTS*, for more information).

ABOVEGROUND PRODUCT WATER STORAGE TANK OPTION

Implementation of the proposed aboveground product water storage tank option upon either the "North" or "West" tank site would require the demolition of an existing fuel oil storage tank, along with the removal of 10- to 15-foot high containment berms along the interior of the optional tank site (berms along the exterior boundaries of the site would remain). Demolition processes for fuel oil tank and berm removal would be similar to that of the proposed project. Tank demolition would also require the removal of any remaining fuel oil within the tank, as well as the remediation of any on-site contamination associated with the site's historical use as a fuel source for the Huntington Beach Generating Station. As the site has been previously graded and the optional tank would be aboveground, implementation would require substantially less grading/excavation in comparison to the proposed underground product water storage tank. It is not anticipated that selection of the aboveground product water storage tank option would alter the construction processes for the off-site components of the project (product water delivery pipeline and underground booster pump station).

Hydrology and Water Quality

Construction of the optional 10 million gallon potable water storage tank would require excavation, grading, and/or backfilling that may generate erosive conditions that would impact storm water run-off quality. However, the quantity of earth-moving and duration of tank construction in comparison to the proposed underground product water storage tank is substantially reduced. This option, however, would be subject to the same regulations as the proposed project, such as the DAMP, NPDES Permit process, SWPPP process, and implementation of standard BMPs. In addition, the containment berms surrounding both the "West" and "North" tank sites would contain storm water on-site. Should dewatering be necessary for aboveground tank implementation, groundwater would be properly treated (desiltation/remediation) if deemed necessary through water quality testing. Impacts in this regard are expected to be less than those of the proposed project, and would not be significant.

Air Quality

As the optional aboveground tank would require substantially less grading, excavation, and backfilling as the proposed underground tank, impacts in regards to air quality are anticipated to be reduced. The aboveground tank option would result in a smaller amount of earth-moving, fewer truck trips, less construction equipment, and a shorter construction duration. As such, this option would generate a lower amount of fugitive dust and emissions from demolition, remediation, and construction equipment. It should be noted that this option would require the demolition of either the existing "West" or "North" fuel oil storage tank. Additional impacts due to the demolition of a fuel oil storage tank are minor when compared to the impacts of excavation necessary for an underground product water storage tank. However, the proposed project with optional tank implementation is still anticipated to result in an unavoidable significant air quality impact due to short-term nitrous oxide (NO_x) emissions and possible exceedances of carbon monoxide (CO) and reactive organic gas (ROG) emissions thresholds. Impacts for the aboveground tank option are anticipated to be less than those of the proposed project, but would still result in an unavoidable significant impact in regards to air quality.

Noise

Implementation of an aboveground product water storage tank option is anticipated to result in reduced noise impacts when compared to the proposed project. As stated above, the aboveground tank option would result in a smaller amount of earth-moving, fewer truck trips, less construction equipment, and a shorter construction duration. Depending on whether or not dewatering for the aboveground tank is necessary, the driving of sheet piles (which is an exceptionally noisy process) may be avoided with this option, as excavation for the aboveground tank would only be required for foundational support. This tank option would not alter the design or construction plans for any other portions of the project (desalination facility, water transmission pipeline, and off-site underground booster pump station). Should the "West" tank site be selected to aboveground tank implementation, residential uses to the west along Newland Street (Huntington-By-The-Sea Mobile Home Park is situated approximately 300 feet to the west) may experience a heightened exposure to construction noise levels than the proposed project or selection of the "North" tank site. However, this option would comply with all City noise regulations, and all such impacts would be short-term in nature. All truck traffic would be subject to a truck and construction vehicle routing plan to minimize impacts to sensitive receptors on local roadways. Impacts would be reduced when compared to the proposed project, and are anticipated to be less than significant.

Public Services & Utilities

The majority of impacts to public services and utilities as a result of the proposed project are anticipated to result from water transmission pipeline implementation. The implementation of the optional aboveground storage tank will have a modified site plan but will not alter any other portions of the proposed project, including the design and construction of the water pipeline. As stated previously, the demolition, remediation, and construction process for optional tank implementation may impact utilities in regards to damage or disruption of underground facilities such as water/sewer pipelines, electrical conduits, underground cable television or telephone wiring, and natural gas mains. Grading on the "West" or "North" tank sites would occur only after the project engineer has identified the locations of underground utilities. Impacts in this regard are anticipated to be similar to those of the proposed project, and are anticipated to be less than significant.

Aesthetics/Light & Glare

Demolition, remediation, and construction debris, associated mechanical equipment, and high levels of truck traffic may adversely impact views across the optional tank site. This option would not alter any other portions of the proposed project in regards to aesthetics/light and glare. Impacts would generally be reduced, as the aboveground tank option would result in a smaller amount of earth-moving, fewer truck trips, less construction equipment, and a shorter construction duration. However, should the "West" tank site be selected for aboveground tank implementation, construction processes may have a greater impact on residential uses along the western side of Newland Street. As stated above, these impacts would be short-term in nature, and standard construction measures such as chain link fencing and nylon mesh would be utilized to screen staging and construction areas from site visitors and the general public at the proposed optional tank site. In addition a staging area for equipment associated with the demolition, remediation, and construction process would be situated within AES property boundaries. Impacts resulting from optional aboveground storage tank construction in regards to aesthetics/light and glare would be reduced in comparison to the proposed project, and are expected to be less than significant.

Hazards and Hazardous Materials

Construction for the optional aboveground storage tank is anticipated to have greater impacts in regards to hazards and hazardous materials when compared to the proposed project. Demolition of the existing "West" or "North" fuel oil storage tank would result in heightened potential impacts due to asbestos or lead based paint to construction workers and surrounding uses (especially if the "West" tank site is selected, as it is situated nearby residential uses along Newland Street). Should contaminated soils and/or groundwater (should dewatering be necessary) be detected, remediation in accordance with applicable federal, state, and local regulations would be required. Implementation of this tank option would not alter any other components of the proposed project which include the desalination facility, water transmission pipeline, and off-site underground booster pump station. While the impacts of this option are potentially greater than the proposed project, they are anticipated to be less than significant with compliance with standard construction measures and recommended mitigation measures.

Traffic

As the aboveground tank option would result in a smaller amount of earth-moving, fewer truck trips/construction worker trips, less construction equipment, and shorter construction duration, traffic impacts to the local transportation system would be reduced in comparison to the proposed project. Aboveground tank construction would create a new source of truck traffic due to the demolition of either the "West" or "North" fuel oil storage tank, but this source of traffic is nominal compared to the excavation of approximately 60,000 cubic yards of soil for the underground product water tank. Construction traffic would utilize the same access point and truck route as the proposed project, and a Traffic Management Plan would be prepared. This option would not alter the design or construction of any other components of the proposed project. Short-term impacts in this regard are anticipated to be less than significant in regards to traffic.

Biological Resources

No biological resources are known to exist on either of the two optional tank sites. In addition, optional aboveground storage tank implementation would not alter the design or construction of any other components of the proposed project. As such, impacts to biological resources as a

result of optional tank construction would be similar to those of the proposed project and are expected to be less than significant.

Cultural Resources

As both optional tank sites are fully developed and disturbed, no cultural resources are known to exist on-site. In addition, optional aboveground storage tank implementation would not alter the design or construction of any other components of the proposed project. As such, impacts to cultural resources as a result of optional tank construction would be similar to those of the proposed project and are expected to be less than significant.

MITIGATION MEASURES

HYDROLOGY AND WATER QUALITY

CON-1 Concurrent with the submittal of the Grading Plan, the Applicant shall submit an Erosion Control Plan to the City of Huntington Beach Department of Public Works which will include the following measures:

a) Where necessary, temporary and/or permanent erosion control devices, as approved by the Department of Public Works, shall be employed to control erosion and provide safety during the rainy season from October 15th to April 15th.

b) Equipment and workers for emergency work shall be made available at all times during the rainy season. Necessary materials shall be available on-site and stockpiled at convenient locations to facilitate the rapid construction of temporary devices when rain is imminent.

c) Erosion control devices shall not be moved or modified without the approval of the Department of Public Works.

d) All removable erosion protective devices shall be in place at the end of each working day when the 5-day rain probability forecast exceeds 40%.

e) After a rainstorm, all silt and debris shall be removed from streets, check berms and basins.

f) Graded areas on the permitted area perimeter must drain away from the face of the slopes at the conclusion of each working day. Drainage is to be directed toward desilting facilities.

g) The permittee and contractor shall be responsible and shall take necessary precautions to prevent public trespass onto areas where impounded water creates a hazardous condition.

h) The permittee and contractor shall inspect the erosion control work and ensure that the work is in accordance with the approved plans.

i) Water shall be applied to the site twice daily during grading operations or as otherwise directed by the County of Orange Inspector in compliance with South Coast AQMD rule 403 (Fugitive Dust Emissions). A grading operations plan may be required including watering procedures to minimize dust, and equipment procedures to minimize vehicle emissions from grading equipment.

CON-2 Construction of the project shall include Best Management Practices (BMPs) as stated in the Drainage Area Management Plan (DAMP) by the Orange County Stormwater Management Program. BMPs applicable to the project include the following:

- Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants, glues, limes, pesticides, herbicides, wood preservatives and solvents; asbestos fibers, paint flakes, or stucco fragments; fuels, oils, lubricants, and hydraulic, radiator, or battery fluids; fertilizers, vehicle/equipment wash water and concrete wash water; concrete, detergent, or floatable wastes; wastes from any engine/equipment steam cleanings or chemical degreasing; and superchlorinated potable water line flushings.
- During construction, disposal of such materials should occur in a specified and controlled temporary area on-site, physically separated from potential stormwater run-off, with ultimate disposal in accordance with local, state, and federal requirements.

CON-3 As part of its compliance with the NPDES requirements, the Applicant shall prepare a Notice of Intent (NOI) to be submitted to the Santa Ana Regional Water Quality Control Board providing notification and intent to comply with the State of California general permit. Prior to construction, completion of a Storm Water Pollution Prevention Plan (SWPPP) will be required for construction activities on-site. A copy of the SWPPP shall be available and implemented at the construction site at all times.

CON-4 Prior to any dewatering activities, the Applicant shall obtain and comply with a general dewatering NPDES permit from the Santa Ana Regional Water Quality Control Board.

CON-5 The Applicant shall submit a dewatering plan for review and approval by the City of Huntington Beach Department of Public Works. The Applicant will comply with the approved dewatering plan.

CON-6 The Applicant shall inform the Orange County Water District (OCWD) of its plans for on-site dewatering, and, if necessary, will acquire necessary permits and approvals from the OCWD to ensure that no adverse impacts on the groundwater basin or seawater intrusion barrier occur as a result of the proposed project. The Applicant will comply with any approved dewatering permits or plans.

CON-7 During dewatering operations, a survey program shall be conducted on surrounding properties and structures to ensure that movement or settlement from on-site dewatering operations does not occur. This survey program will be subject to approval by the City Engineer.

CON-8 Should on-site dewatering operations require discharge into the sanitary sewer system, the Applicant shall obtain applicable permits and approvals from the Orange County Sanitation District (OCSD) and City of Huntington Beach Department of Public Works. Should the dewatering discharge be directed to existing AES stormdrain facilities, the Applicant shall ensure that dewatering is addressed in the Applicant's SARWQCB NPDES permit.

AIR QUALITY

CON-9 Prior to the issuance of grading permits or approval of grading plans, the City shall include a dust control plan as part of the construction contract standard specifications, which shall include measures to meet the requirements of the City and SCAQMD Rules 402 and 403. Such measures may include, but are not limited to, the following:

During grading operations, the following shall be complied with:

- Attempt to phase and schedule activities to avoid high-ozone days and first-stage smog alerts;
- Discontinue operation during second-stage smog alerts;
- All haul trucks shall be covered prior to leaving the site to prevent dust from impacting the surrounding areas;
- Comply with AQMD Rule 403, particularly to minimize fugitive dust and noise to surrounding areas;
- Moisten soil each day prior to commencing grading to depth of soil cut;
- Water exposed surfaces at least twice a day under calm conditions and as often as needed on windy days when winds are less than 25 mile per day or during very dry weather in order to maintain a surface crust and prevent the release of visible emissions from the construction site;
- Treat any area that will be exposed for extended periods with a soil conditioner to stabilize soil or temporarily plant with vegetation;
- Wash mud-covered tires and under carriages of trucks leaving construction sites;
- Provide for street sweeping, as needed, on adjacent roadways to remove dirt dropped by construction vehicles or mud which would otherwise be carried off by trucks departing project sites;
- Securely cover all loads of fill coming to the site with a tight fitting tarp;
- Cease grading during periods when winds exceed 25 miles per hour;
- Maintain construction equipment in peak operating condition so as to reduce operating emissions;
- Use low-sulfur diesel fuel in all equipment;
- Use electric equipment whenever practicable; and
- Shut off engines when not in use.

NOISE

CON-10 Prior to the issuance of any grading permits, the Applicant shall ensure evidence acceptable to the City of Huntington Beach Department of Planning and Public Works that:

- ❖ All construction vehicles or equipment, fixed or mobile, operated within 1,000 feet of a dwelling shall be equipped with properly operating and maintained mufflers;
- ❖ All operations shall comply with the City of Huntington Beach Municipal Code Chapter 8.40 (Noise Control);
- ❖ Stockpiling and/or vehicle staging areas shall be located as far as practicable from residential areas; and
- ❖ Notations in the above format, appropriately numbered and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

CON-11 Should the project require off-site import/export of fill material during demolition, remediation, and construction, trucks shall utilize a route that is least disruptive to sensitive receptors, preferably Newland Street to Pacific Coast Highway to Beach Boulevard to I-405. Construction trucks shall be prohibited from operating on Saturdays, Sundays and federal holidays.

CON-12 To reduce project-related construction noise impacts generated by the proposed project, the following conditions shall be implemented:

- ❖ Construction activities shall be limited to hours specified by the City Noise Ordinance; and
- ❖ Unnecessary idling of internal combustion engines shall be prohibited.

PUBLIC SERVICES AND UTILITIES

CON-13 Unless underground utility locations are well documented, as determined by the City of Huntington Beach Public Works Department, the project engineer shall perform geophysical surveys to identify subsurface utilities and structures, the findings of which shall be incorporated into site design. Pipelines or conduits which may be encountered within the excavation and graded areas shall either be relocated or be cut and plugged according to the applicable code requirements.

AESTHETICS/LIGHT & GLARE

CON-14 During construction, a security fence, the height of which shall be determined by the City of Huntington Beach Department of Building and Safety, shall be installed around the perimeter of the site. The construction site shall be kept clear of all trash, weeds, etc.

CON-15 Construction activities, to the extent feasible, shall be concentrated away from adjacent residential areas. Equipment storage and soil stockpiling shall be at least 100 feet away from adjacent residential property lines.

HAZARDS AND HAZARDOUS MATERIALS

CON-16 Prior to excavation of the contaminated and other areas for rough grading, the project site shall be cleared of all excess vegetation, surface trash, piping, debris and other

deleterious materials. These materials shall be removed and disposed of properly (recycled if possible).

CON-17 Proper excavation procedures shall be followed to comply with OSHA's Safety and Health Standards. If applicable, the South Coast Air Quality Management District (SCAQMD) Rule 1166 permit shall be obtained prior to the commencement of excavation and remedial activities.

CON-18 The contractor shall follow all recommendations contained within the adopted Remedial Action Plan for the project site.

CON-19 If asbestos or lead-based paints are identified in any on-site structures, the contractor shall obtain a qualified contractor to survey the project site and assess the potential hazard. The contractor shall contact the SCAQMD and the City of Huntington Beach Departments of Planning and Building and Safety prior to asbestos/lead paint removal.

CON-20 If any hazardous materials not previously addressed in the mitigation measures contained herein are identified and/or released to the environment at any point during the site cleanup process, operations in that area shall cease immediately. At the earliest possible time, the contractor shall notify the City of Huntington Beach Fire Department of any such findings. Upon notification of the appropriate agencies, a course of action will be determined subject to the approval of the by the City of Huntington Beach Department of Public Works.

CON-21 All structures must be cleaned of hazardous materials prior to off-site transportation, or hauled off-site as a waste in accordance with applicable regulations.

CON-22 Structure removal operations shall comply with all regulations and standards of the SCAQMD.

CON-23 The contractor shall post signs prior to commencing remediation, alerting the public to the site cleanup operations in progress. The size, wording and placement of these signs shall be reviewed and approved by the City of Huntington Beach Departments of Planning and Public Works..

CON-24 Any unrecorded or unknown wells uncovered during the excavation or grading process shall be immediately reported to and coordinated with the City of Huntington Beach Fire Department and State Division of Oil, Gas, and Geothermal Resources (DOGGR).

CON-25 During remediation, if any soil is found to be hazardous due to contamination other than petroleum hydrocarbons, it will be segregated, stockpiled, and handled separately.

CON-26 Dust and volatile organic emissions from excavation activities shall be controlled through water spray or by employing other approved vapor suppressants including hydromulch spray in accordance with Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements and the South Coast Air Quality Management District (SCAQMD) permit conditions.

CON-27 Prior to the excavation process for pipeline construction, the contractor shall coordinate with the County of Orange's Integrated Waste Management Department in order to

ensure that proposed pipeline construction does not impact drainage of the former Cannery Street Landfill.

CON-28 Methane migration features will be consistent with the requirements of the City of Huntington Beach Specification Number 429 and other applicable state and federal regulations. The methane migration features shall be submitted for review and approval to the Orange County Health Care Agency (OCHCA), Environmental Health Division.

CON-29 Studies to evaluate the potential for landfill gas (LFG) generation and migration will be completed prior to implementation of the proposed water delivery component of the project. Appropriate mitigation measures will be coordinated with the South Coast Air Quality Management District, Solid Waste Local Enforcement Agency, Regional Water Quality Control Board, and the City of Huntington Beach Fire Department. Mitigation measures could entail active or passive extraction of LFG to control surface and off-site migration and passive barriers with vent layers and alarm systems below trenches and within 1,000 feet of the former Cannery Street Landfill boundary. A comprehensive monitoring network will be established along the pipeline alignment adjacent to the landfill. Periodic monitoring of the monitoring network will be performed.

TRAFFIC

CON-30 A Traffic Management Plan (TMP) shall be prepared and implemented to the satisfaction of the affected jurisdiction within which the facilities are to be constructed when the facilities are to be located where construction would affect roadways. The TMP shall include, but not be limited to, the following measures:

- Limit construction to one side of the road or out of the roadbed where possible;
- Provision of continued access to commercial and residential properties adjacent to construction sites;
- Provide alternate bicycle routes and pedestrian paths where existing paths/ routes are disrupted by construction activities, if any;
- Submit a truck routing plan, for approval by the City of Huntington Beach, County, and other responsible public agencies in order to minimize impacts from truck traffic during material delivery and disposal;
- Where construction is proposed for two-lane roadways, confine construction to one-half of the pavement width. Establish one lane of traffic on the other half of the roadway using appropriate construction signage and flagmen, or submit a detour plan for approval by the City Traffic Engineer;
- The Traffic Management Plan shall be approved by affected agencies at least two weeks prior to construction;
- Construction activities shall, to the extent feasible, be coordinated with other construction activity taking place in the affected area(s); and
- Provide for temporary parking, where necessary, during installation of pipelines within the AES site.

CON-31 Prior to initiating the removal of structures and contaminated materials, the contractor must provide evidence that the removal of materials will be subject to a traffic control plan, for review and approval by the by the City of Huntington Beach Department of Public Works. The intent of this measure is to minimize the time period and disruption of heavy duty trucks.

CON-32 Construction related activities will be subject to, and comply with, standard street use requirements imposed by the City of Huntington Beach, County and other public agencies, including the use of flagmen to assist with haul truck ingress and egress of construction areas and limiting the large size vehicles to off-peak commute traffic periods.

CON-33 The Contractor shall obtain the necessary right-of-way encroachment permits and satisfy all permit requirements. Also, nighttime construction may be performed in congested areas.

CON-34 During periods of heavy equipment access or truck hauling, the Contractor will provide construction traffic signage and a construction traffic flagman to control construction and general project traffic at points of ingress and egress and along roadways that require a lane closure.

CON-35 The Applicant shall coordinate with the Department of Public Works, Traffic Engineering Division in developing a truck and construction vehicle routing plan. This plan shall include the approximate number of truck trips and the proposed truck haul routes. It shall specify the hours in which transport activities can occur and methods to mitigate construction related impacts to adjacent residents and the surrounding area. The plan shall take into consideration any street improvement construction occurring in the vicinity. These plans must be submitted for approval to the Department of Public Works.

BIOLOGICAL RESOURCES

CON-36 Prior to construction on the proposed booster pump station site, three focused coastal California gnatcatcher surveys shall be performed in accordance with USFWS protocols, preferably during the gnatcatcher breeding season. Should the species be observed on or adjacent to the site, consultation and permitting through the USFWS would be required.

CON-37 Prior to construction on the proposed booster pump station site, eight focused least Bell's vireo surveys shall be performed for the off-site underground booster pump station (at least 10 days apart during the vireo nesting season of April and July) in accordance with USFWS protocols. Should the species be observed on or adjacent to the site, consultation and permitting through the USFWS would be required. This measure may not be necessary if construction phasing can avoid the vireo nesting season.

CON-38 Prior to construction on the proposed booster pump station site, a qualified biologist shall perform a habitat assessment for the southwestern pond turtle. If habitat for this species is observed, a trapping program will be implemented to determine the presence

or absence of these species. If present, pond turtles must be trapped and relocated prior to the start of construction.

CON-39 A survey for active raptor nests shall be performed by a qualified biologist 30 days prior to the commencement of construction activities on the proposed booster pump station site. Any occupied nests discovered during survey efforts shall be mapped on construction plans for the site. If recommended by the biologist, restrictions on construction activities may be required in the vicinity of the nest until the nest is no longer active.

CULTURAL RESOURCES

CON-40 Should buried historical/archaeological resources be discovered during excavation on the proposed booster pump station site, all construction work in that area shall be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

CON-41 During excavation of five feet below ground surface or lower on the proposed booster pump station site, a paleontological resource recovery program for Miocene invertebrate fossils shall be implemented. This program shall include, but will not be limited to, the following:

- Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. The monitor shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must me empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially fossiliferous units described herein are not encountered, or upon exposure are determined following examination by qualified paleontologic personnel to have low potential to contain fossil resources;
- Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates;
- Identification and curation of specimens into a museum repository with permanent retrievable storage. The paleontologist should have a written respository agreement in hand prior to the initiation of mitigation activities; and
- Preparation of a report of findings with appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency, would signify completion of the program to mitigate impacts to paleontologic resources.

UNAVOIDABLE SIGNIFICANT IMPACTS

The proposed desalination project may have unavoidable significant impacts in regards to temporary, short-term emissions for ROG, NO_x, and CO. These unavoidable significant impacts are anticipated to occur for the duration of the demolition, remediation, and construction process (expected to last approximately 18-24 months). Although the unavoidable significant impact for short-term emissions would most likely remain upon implementation of the aboveground product

water storage tank option, short-term air emissions would be reduced (as a reduced amount of excavation and transport of soils would occur).